

ROOM USE ONLY

A MULTI-USE
STRUCTURE
FOR
SEDDON ISLAND

ROOM USE ONLY

wm v durkin III
thesis research
fall 1970

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A-1-2

The increasing complexity of today's society and technology has made the traditional two dimensional approaches to city and building, design, i.e. the separation of business and commercial, residential, educational, and recreational areas, by roads, open spaces, etc., inappropriate to the concept of the city as a living organism.

Our rate of population growth progresses not linearly but instead in a geometric series. Accompanying this growth is a shift of the population from low density rural regions to major metropolitan areas. Not only must the cities rebuild to provide for existing persons but must also build for the new arrivals. More and more space must be had and it must be had where it is least obtainable, in the midst of our urban areas.

A viable city now requires that the different functions of city life be mixed rather than separated. A mix of functions makes the city a continually living organism, not an organism that thrives only in certain areas during particular times of day. A multi-use structure mixes the functions of the city, promotes a lively approach to city life among people, and perhaps most important of all, conserves existing land and open spaces for all the people.

In this particular project a multi-use structure encompassing, business office, shopping, residential and recreational functions has been selected. Each function is to reflect and enhance the other in the hope that the structure will be a dynamic and living creation.

Tampa has been selected as the site location for several reasons. First it is a rapidly growing industrial city in a region where five medium and large cities are within, at most, fifty miles of one another. A great deal of new building will take place within the next twenty years, particularly in the office, apartment, and commercial shopping areas of construction. Secondly, Seddon Island, the site selected, is a particularly interesting site in terms of size, location and existing development.

A.3

The thesis problem will be adequately communicated by verbal and graphic means.

B1-2 HISTORY

Although the complete multi-use structure is a creation of the present, it has some historical ancestry. The past shows us building complexes and construction which have housed whole communities of persons and all of the human activities of production and consumption. Even the ideal, the intellectual or aesthetic concept of a whole community within a single construction has cropped up in the backgrounds of medieval paintings, in the sections of grand hotels, ocean liners, and railway terminal complexes. These show the complexity and comprehensiveness of these huge constructions.

A building that shelters all the activities normal to life is not nothing new, any peasant house of the pre-industrial age, remote from the facilities of town, was likely to house a great many diverse activities. Brewing, soapmaking, dairying, tailoring, the spinning and weaving of cloth, to name a few, all often took place under the same roof with the living area.

In more collective structures, castles, monasteries or later on utopian collectives, whole communities of persons were housed in tightly composed architectural complexes, arranged around courtyards. People exchanged money and services, and banded together to offer the world outside something in exchange for its wealth - protection in the castle, prayers in the monastery, and almost anything in the new utopias. All this, however, was still housed at a primitive technical level. Structural alterations were accomplished by means of trowel and pickaxe. Interior spaces were unspecialized. Communication called for walking and climbing. The building which housed such communities, then,

was still a sprawling mess.

Similar, but more structurally articulated, was the medieval and Renaissance bridge, with its houses and shops clinging to the roadway. In amenity conscious later periods, such buildings were eliminated. But the idea of combining enclosed space with bridges and getting two things for the price of one-and-one-half has retained its fascination.

Thus, Le Corbusier, in the 1930's proposed elevated roadways with housing in the supporting structures for Algiers and Rio, and Raymond Hood, in the late 20's suggested using suspension bridges, tower, hangers and all, as supports for apartments and offices.

In addition, there are pre-machine age constructions that give the effect of, without really being, multi-use structures. Mont-St.-Michel, the puebls, Italian hill towns, Aegean villages are all examples of this. The need to build on restricted sites, the use of uniform materials, the same scale and common tradition determining the shape and finish of the buildings, give them the illusion of being compact structures built to a comprehensive plan.

The machine and its exploitation began to create approximations of multi-use structures about a century ago. The Grand Central complex in New York, as originally planned, was the culmination of 50 or more years of railroad terminal development. The hotel had long been a place to sleep, eat, drink, sell things, and conduct business. When, around 1850, it was combined with the railway station, it universalized it. The station hotel became a part of the railway system as well as a part of the city in which it stood. If the great hotels

over Grand Central Terminal had been built as intended, the complex would have become a city within a city. As it is, there are not only two levels of railroad tracks, three subway lines, shops, offices, restaurants, and a movie house, all integrates into the complex, but the spaces of adjoining buildings are tapped through passages under the surrounding streets. In Cleveland a showier group of buildings went even further with the inclusion of a hotel, and department store, as well as offices, restaurants, and shops. The best example, though, of the forerunner of the multi-use structure is the luxury hotel, with its shops, restaurants, hotel rooms, and apartments. An affluent, sedentary dweller needed only a hospital to be born in and a mortuary to be buried in.

The historic examples thus far have approached the multi-use structure in intuitive ways; their architects and builders were in situations in which solutions of a multi-use type were necessary or expediant; the lumping together of the functions of a modern town was not done in response to a formulated ideal but as a matter of practical solution of particular problems. It was probably the realization that technology had turned the modern building into something like an organism that prompted some architects to go further and imagine the modern community, with its subway, sewers, water, gas and electrical mains as an organism, also.

To the Futurist architect Antonio Sant'Elia great development possibilities were found in the movement of vehicles and the intersections of the lines of transportation. These horizontal and vertical movement lines, the transit centers, powerhouses, and other installations.

of his city were organic life lines. Once established, these monuments became the basis for his organic city.

Le Corbusier followed the Sant'Elia concept of a transportation center in his Ville Contemporaine. His Gare Centrale was to include a highway interchange, a rail station, and a landing deck. The elevated highways entering the "Ville" emphasized the organic nature of the project. In his Unite d'Habitation in Marseilles, Corbu, attempted to provide in one building all of the services of a residential neighborhood. Included were shops, a post office, a cafeteria, a nursery, a playground and hotel rooms as well as apartments.

Frank Lloyd Wright's first building projects to approach the comprehensive quality of the multi-use structure were the two schemes of 1947 for the development of the Point in Pittsburgh. Office, amusement areas, garages, and bridges were worked together to form an architectural whole. In 1959 Wright was commissioned to design a residential city for Ellis Island in New York. As completed by his associates the city would have been composed of a round landscaped platform, its edges supported by cables descending from apartment towers. Under peripheral domes on the platform there would have been educational and recreational facilities moving sidewalks, escalators and elevators were to move people.

In the last few years the multi-use structure concept has developed rapidly. Many architects have developed systems that are adaptable to varying situations and capable of indefinite growth.

Yona Friedman, a French architect, has conceptually divided the city along its network of movement, its "infrastructure", and its en-

closed spaces or "fillings". To do this he uses a raised orthogonal, triangulated space frame. The fillings are "addresses" from which movement originates or terminates. By an analysis of the demand for communication between "addresses" the optimum relative location of houses, shops, institutions, public places, etc. can be established.

Since 1960, a Japanese group called the "Metabolists" have been concerned with the inherent ability of the communal "plant" to re-create itself according to demand. The factor common to all their proposals is the creation again of the "infrastructure" that permits individual living and business units to adhere to its walls or platforms in whatever configurations and for whatever lengths of time seem expedient. The most famous of these plans is Kenzo Tange's project for the extension of Tokyo into Tokyo Bay. A series of squared traffic loops would extend from the city into the bay in parallel rows, eventually hooking up with the road system on the other side. On the created land of the center would be business buildings and places for general public use. Housing units in roof like structures would branch off from either side. No one building would be self-contained, but the whole complex, organically hooked up would have the effect of a growing entity.

Throughout history as the world has become increasingly urban and oriented the need for multi-use structures has grown. All are different, but they do share some common characteristics. Among these are: a generous scale for the structure as a whole and an intimate scale for its many parts; flexibility within its basic structure; potential for vertical and horizontal expansion; ability to expand into surrounding

areas and establish connections with the community; and ability to provide most major needs of permanent and transient inhabitants, so that it may become a self-sufficient creation.

Enclosed Box
25% COTTON CONTENT

The intermixing of functions and activities is central to the concept of this project. Office, commercial, residential, transportation and recreational areas and their accompanying functions are all to be mixed and accommodated on the same site. The creation of interdependencies among these areas should produce a quality of continuing liveliness that is presently unknown in downtown Tampa.

The following are the activities to be accommodated:

1. LIVING UNITS

Tampa decidedly lacks luxury apartments and townhouses at this time. Presently there are only two luxury apartment houses, The Harbor House and the Bayshore Towers,, both located on Bayshore Drive beside Tampa Bay, and no luxury townhouses in Tampa. There is an admitted need and market for this type of project in Tampa now.

The cost of land acquisition and development of the site also makes a luxury type development a necessity. The prime location and the other programmed activities as well as the development cost, should make a project of this sort financially successful.

2. OFFICES

New office construction has occurred only in the fringe areas of Tampa in the last few years. This has not occurred because of a lack of desire on the part of tenants to locate in downtown, but instead because of a lack of existing office space in the central business area. Many new corporations are moving their headquarters or opening branches in Tampa. These corporations

want only to locate in downtown. New facilities will have to be built to accomodate them and facilitate the growth of the city. The location of high-quality, high-rise offices on Seddon Island amidst residential housing, shopping, and recreational areas, will be an asset for the development, the city, and the persons living on the island.

3. COMMERCIAL SHOPPING

Currently there is only one luxury shopping center in the Tampa Bay Region. This is located on St. Armands Key, in Sarasota, approximately 50 miles from central Tampa. The shops located here are all of the small boutique type. There are no major stores of the Saks or Lord and Taylor variety. Any shopping of this type must be done in Miami, 250 miles away, or in Atlanta, 500 miles away.

The population of the Region, slightly under 2 million presently, will increase by 25% to 2.5 million in 1980. The effective buying income of persons in the area will double in the same period. Seddon Island is located in the center of this region and has equal access from all cities located in the Region. These facts warrant the creation of a high cost regional shopping center to fill an existing void.

4. RECREATION

The existance of recreational activities are a prime consideration when persons seek new housing. Accordingly recreational facilities, such as a tennis club, marina, restaurants, nightclubs, theaters, etc. should be located in the project.

C-2

SPACE REQUIREMENTS:

$$\begin{aligned} \text{Floor/area or entire project} &= \frac{10,000,000 \text{ sq. ft.}}{7,310,000 \text{ sq. ft.}} \text{ of building area of island} \\ &= 1.36 \end{aligned}$$

$$\begin{aligned} \text{Dwelling units/acre (total)} &= \frac{2100 \text{ units}}{(.30) * 170 \text{ acres}} \\ &= 41.2 \text{ units /acre} \end{aligned}$$

*30%, (.30) land coverage or 70%, (.70) open space.

1. RESIDENTIAL UNITS:

2100 units totaling 2.5 million sq. ft.

ratio of 3 bedroom units to 2 bedroom units to 1 bedroom units of 25-50-25.

$$\begin{array}{rcl} 525 \text{ 3- bedroom units @ 1500 sq. ft.} & = & 787,500 \text{ sq. ft.} \\ 1050 \text{ 2- bedroom units @ 1200 sq. ft.} & = & 1,260,000 \text{ sq. ft.} \\ \underline{525 \text{ 1- bedroom units @ 1000 sq. ft.}} & = & \underline{525,000 \text{ sq. ft.}} \\ 2100 \text{ units} & & 2,572,500 \text{ sq. ft.} \end{array}$$

Total of 41.2 dwelling units/acre

$$\begin{aligned} \text{Townhouses (20\% of development)} &= .20(2100) \\ &= 420 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{Dwelling units/acre (townhouses)} &= \frac{420 \text{ units}}{(.30) 170 \text{ acres}} \\ &= 8.2 \text{ units/acre} \end{aligned}$$

$$\begin{aligned} \text{Apartments (80\% of development)} &= .80(2100) \\ &= 1680 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{Dwelling units/acre (apartments)} &= \frac{1680 \text{ units}}{(.30) 170 \text{ acres}} \\ &= 33 \text{ units/acre} \end{aligned}$$

2. COMMERCIAL OFFICE SPACE:

1.75 million sq. ft. total

3. SHOPPING

750,000 sq. ft. total

2-Department stores @ 100,000 sq. ft. = 200,000 sq. ft.

Small shops, etc. @ 550,000 sq. ft. = 550,000 sq. ft.
750,000 sq. ft. total

4. PARKING

Offices-4375 spaces X 400 sq. ft./space = 1,750,000 sq. ft.
Resid.- 3150 spaces X 400 sq. ft./space = 1,260,000 sq. ft.
Shopping-4125 spaces X 400 sq. ft./space = 1,650,000 sq. ft.
4,660,000 sq. ft.

4.66 million sq. ft. total

5. RECREATIONAL:

Recreational activities such as tennis courts and club, pools, theaters, a boatel, etc. will not be programmed here.

All square footages are based on section C-4, a financial feasibility study.

Tampa is located in a temperate to subtropical zone. This area is characterized by relatively high temperatures and a high humidity. The mean annual average temperature is 87 degrees. The mean average winter temperature is only 65 degrees. The average relative humidity for both winter and summer months is 65%.

Occasional violent weather is a climatic characteristic also. The Tampa Bay Region averages more days of thunderstorms (90) than any other part of the country. The Region is also subject to hurricanes and tropical storms, although no major storm has occurred in the last fifteen years.

In view of this certain design factors for tropical architecture should be given consideration. These are as follows:

1. Temperature and humidity-

Hot saturated air restricts the body's normal loss of heat by radiation, convection, and evaporation. Loss of heat by radiation or convection only occurs when the temperature of the air and surroundings is less than body temperature; and loss of heat by evaporation is restricted when the air is not dry enough.

2. Shading of air-

The shading of air cools it. The shading of surfaces cools them, provided that the material used to shade does not itself collect heat and radiate it.

3. Movement of air-

The natural or forced movement of air is an extremely effective coolant. Air blowing against the skin cools the body by evaporation of heat.

4. Vegetation-

The use of vegetation generally induces a feeling of coolness among people.

5. Materials-

Climate affects the usage of materials. In tropical regions suitable and economical materials that can resist the heat and the wetness should be used.

These factors indicate that great care must be given to the siting and orientation of buildings, the vegetation that goes around them, and the materials that go into them, so that climatically comfortable interior and exterior spaces result.

Before any development can be planned a financial analysis must be made to determine feasibility. A study of desired cash flow for a minimum construction cost is one means of studying feasibility. Such an analysis will establish buildable floor areas and an accompanying construction budget.

Several things must be established first. Costs, both initial and operating, are taken as annual recurring expenses and are regarded as being constant throughout the amortization period. Initial costs will include the cost of the site and of the improvements, the professional fees, and the construction financing; generally, those things that are necessary to construct the building. Operating costs include taxes, maintenance, insurance, debt retirement and the interest on the debt. The rates for both types of costs vary with respect to not only the type of facility, but with time and place. The kind of building and its location will establish the architect's fee, insurance costs, maintenance costs, and will influence the amount of the mortgage. The amount of the mortgage and money costs are a factor of the availability of funds, the Federal Reserve Bank rate, the stock market, and the general economic health of the nation.

DEFINITIONS

1. S= Desired rate of return	= .12
2. q= % of real value C (mortgage amount)	= .9
3. p= Occupancy rate of rental space	= .95
4. R= Annual average rental rate	= 3.75
5. A= Total rental area	= ?
6. e= Efficiency ratio of building type	= .95
7. u= Architect's fee	= .06
8. v= Legal fee	= .01
9. w= Construction loan cut	= .1
10. i= Annual interest rate of mortgage amount	= .08

11. L= Cost of land = 16,700,000 \$
12. t= Annual tax rate = .0125
13. r= Annual insurance rate = .015
14. m= Annual maintenance rate = .06
15. n= Amortization period in years = 40

$$C = \text{Cash flow} = \text{Income} - \text{Expense}$$

$$C = RAez = L + yB$$

where $y = (1 + u + v + w)$
 $B = \text{Cost of improvements}$

$$\text{Let } z = \frac{(e-m)p}{s(1-q) + \frac{iq}{1 + \frac{1}{(1+i)^n}} + t + r}$$

$$z = \frac{(.95 - .06) .95}{.12(1-.9) + \frac{.08(.9)}{1 + \frac{1}{(1+.08)^{40}}} + .0125 + .015}$$

$$z = 7.8$$

$$y = 1 + .06 + .01 + .1 = 1.17$$

$$RAez = L + yB$$

$$\frac{B}{A} = \frac{Re z}{y} - \frac{L}{Ay}$$

$$\frac{B}{A} = \frac{3.75(0.95)(7.8)}{1.17} - \frac{16.7 (10)^6}{1.17 A}$$

$$\frac{B}{A} = \frac{27.8}{1.17} - \frac{16.7 (10)^6}{1.17 A}$$

$$B = 23.8 \text{ A} - 14.25 (10^6)$$

$$\frac{1}{2} \left(\frac{1}{2} \right) = \frac{1}{4}$$

	A = area (sq. ft.)	B = total cost	$\frac{B}{A} = \frac{\$}{\text{sq. ft.}}$
1.	1,000,000	9,550,000	9.55
2.	2,000,000	33,550,000	16.78
3.	3,000,000	57,150,000	19.05
4.	4,000,000	80,950,000	20.24
5.	5,000,000	104,750,000	20.95
6.	6,000,000	128,550,000	21.43
7.	7,000,000	152,350,000	21.76
8.	8,000,000	176,150,000	22.02
9.	9,000,000	199,950,000	22.21
10.	10,000,000	223,750,000	22.38
11.	15,000,000	342,750,000	22.85
12.	20,000,000	461,750,000	23.09
13.	25,000,000	580,750,000	23.23

The best region to build in occurs as the curve of a graph of the preceding figures (plotted B/A v. A) begins to flatten out, (See page C-12 for graph) in this particular case, somewhere between 4 and 10 million square feet of building area. As a trial select 5 million square feet at a cost of \$20,95/sq. ft., or a total of \$104,750,000.

---- For 5 million sq. ft.:

- 1. Offices @ 35% of project* = 1,750,000sq. ft.
- 2. Apartments @ 50% of project* = 2,500,000sq. ft.
- 3. Shopping @ 15% of project* = 750,000sq. ft.
- 5,000,000sq. ft.

*The percentages of project selected are completely arbitrary but are considered reasonable for a project of this sort.

Include the parking requirements for these gross areas:

- 1. Office- 2.5 cars/1000 sq. ft. = 4375
- 2. Apartments- 1.5 cars/unit* = 3150
- 3. Shopping- 5.5 cars/1000sq. ft. = 4125
- 11,650 cars total

11,650 cars X 400 sq. ft./car = 4,560,000 sq. ft. of parking

*Assume approx. 1200 sq. ft./unit + 2,500,000

*Assume approx. 1200 sq. ft./ unit + 2,500,000 sq. ft. = 2100 units

Add building area to amount of parking area needed:

5,000,000 sq. ft. + 4,560,000 sq. ft. = 9,560,000 sq. ft.

Try 10,000,000 sq. ft., total building area, including parking, based on the previous percentages reduced by one-half to include the parking area, i.e. approximately 50 percent of the total square footage.

----- For 10 million sq. ft. at the graphed value of \$22.38/sq. ft.

1. Offices @ 17.5% of project	=1,750,000sq. ft.
2. Apartments @ 25% of project	=2,500,000sq. ft.
3. Shopping @ 7.5% of project	= 750,000sq. ft.
4. Parking @ 50% of project	=5,000,000sq. ft.
	<u>10,000,000sq. ft.</u>

Calculate the actual cost of project per sq. ft. using the figures of \$23/sq. ft. for offices, \$20/sq. ft. for apartments, \$12/sq. ft. for commercial shopping, and \$8/sq. ft. for structural parking.

1. Offices- \$23/sq. ft. X 17.5% of project	=\$4.025/sq. ft.
2. Apartments- \$20/sq. ft. X 25% of project	=\$5.000/sq. ft.
3. Shopping- \$12/sq. ft. X 7.5% of project	=\$.900/sq. ft.
4. Parking- \$8/sq. ft. X 50% of project	=\$4.000/sq. ft.
	<u>\$13.925/sq. ft.</u>

Calculate the rate of rental return, R, using \$5/sq. ft. for offices, \$3.5/sq. ft. for apartments, \$3/sq. ft. for commercial shopping, and \$.80/sq. ft. for parking.

1. Offices- \$5/sq. ft. X 17.5% of project	=\$.875/sq. ft.
2. Apartments- \$3.5/sq. ft. X 25% of project	=\$.875/sq. ft.
3. Shopping- \$3/sq. ft. X 7.5% of project	=\$.225/sq. ft.
4. Parking- \$.80/sq. ft. X 50% of project	=\$.400/sq. ft.
	<u>\$2.375/sq. ft.</u>

The newly calculated rate of rental return should be reinserted into the formula $\frac{B}{A} = \frac{R_{ez}}{y} - \frac{L}{Ay}$ to determine a new allowable cost

per square foot.

$$\frac{B}{A} = \frac{2.375(.95)(7.8)}{1.17} - \frac{16.7(10)}{1.17 A}$$

$$= \frac{17.55}{1.17} - \frac{16.7(10)}{1.17 A}$$

$$B = 15A - 14.25 \times 10$$

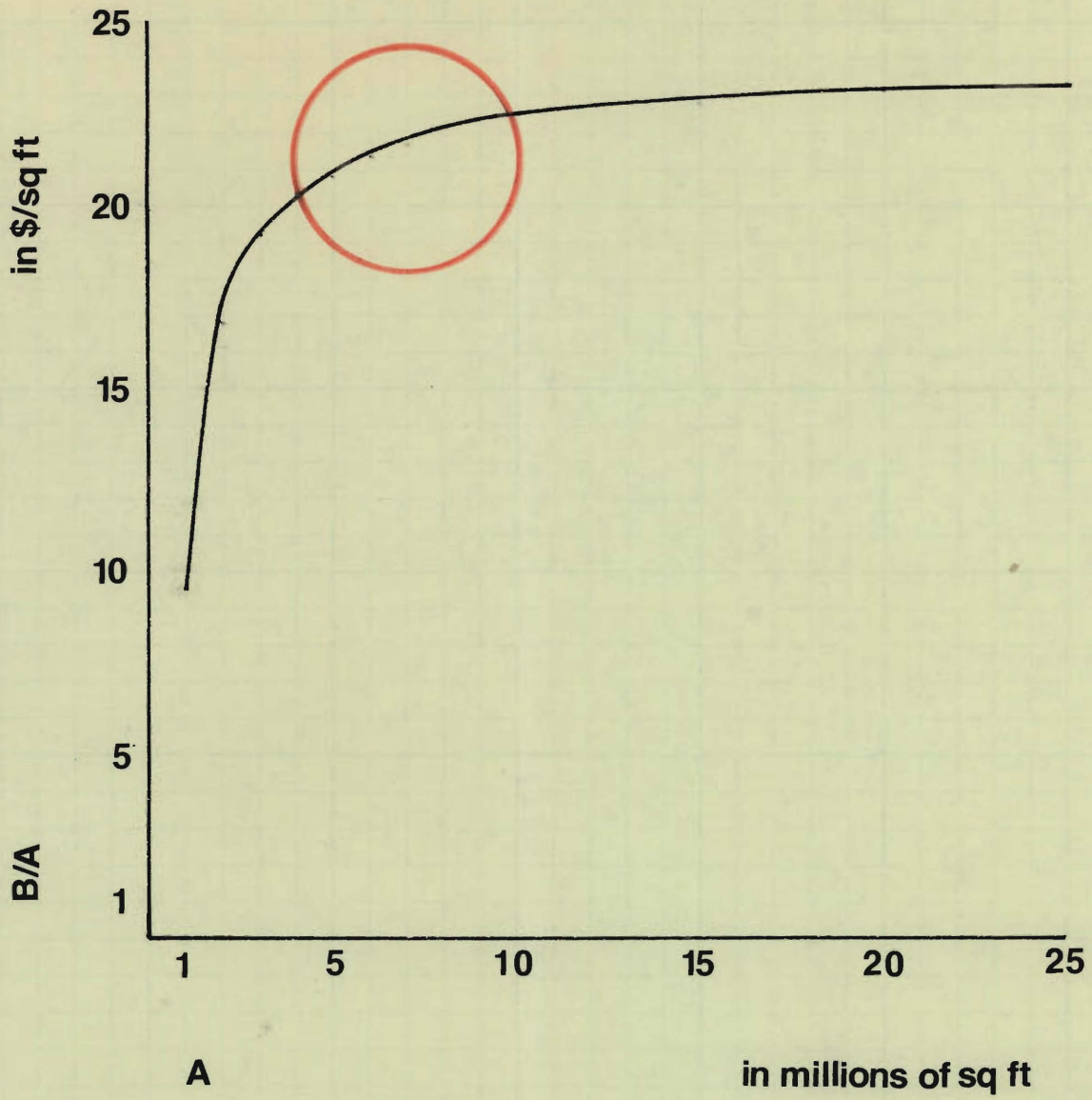
$$A = 10,000,000 \text{ sq. ft.}$$

$$= 145,750,000 \$$$

$$\frac{B}{A} = \$14.57/\text{sq. ft.}$$

actual cost of \$13.925/sq. ft. is less than allowable cost of \$14.57/sq. ft.

The selection of the figure of 10 million square feet for development is justifiable for several reasons. First, it is financially feasible in terms of cash flow. Next, Tampa can absorb and market this amount of construction, particularly if, the development takes place in stages. Third and last, any smaller would not do justice to either the site, 170 acres of prime waterfront land, or to itself.



C-6

At today's stage of development within the building industry, conventional materials, construction techniques, and organizational relationships between architect, engineer, and contractor continue to be employed. Emphasis is on the refinement of existing structural techniques rather than the advancement of new systems of construction and new materials. The reasons for this are of course efficiency and economy. The use of new systems of construction and new materials usually calls for a great deal of planning on the part of architects and engineers, the use of elaborate equipment, and the retraining of construction workers. These all call for much time and money, time which architect and engineers do not have and money that clients are unable or unwilling to invest.

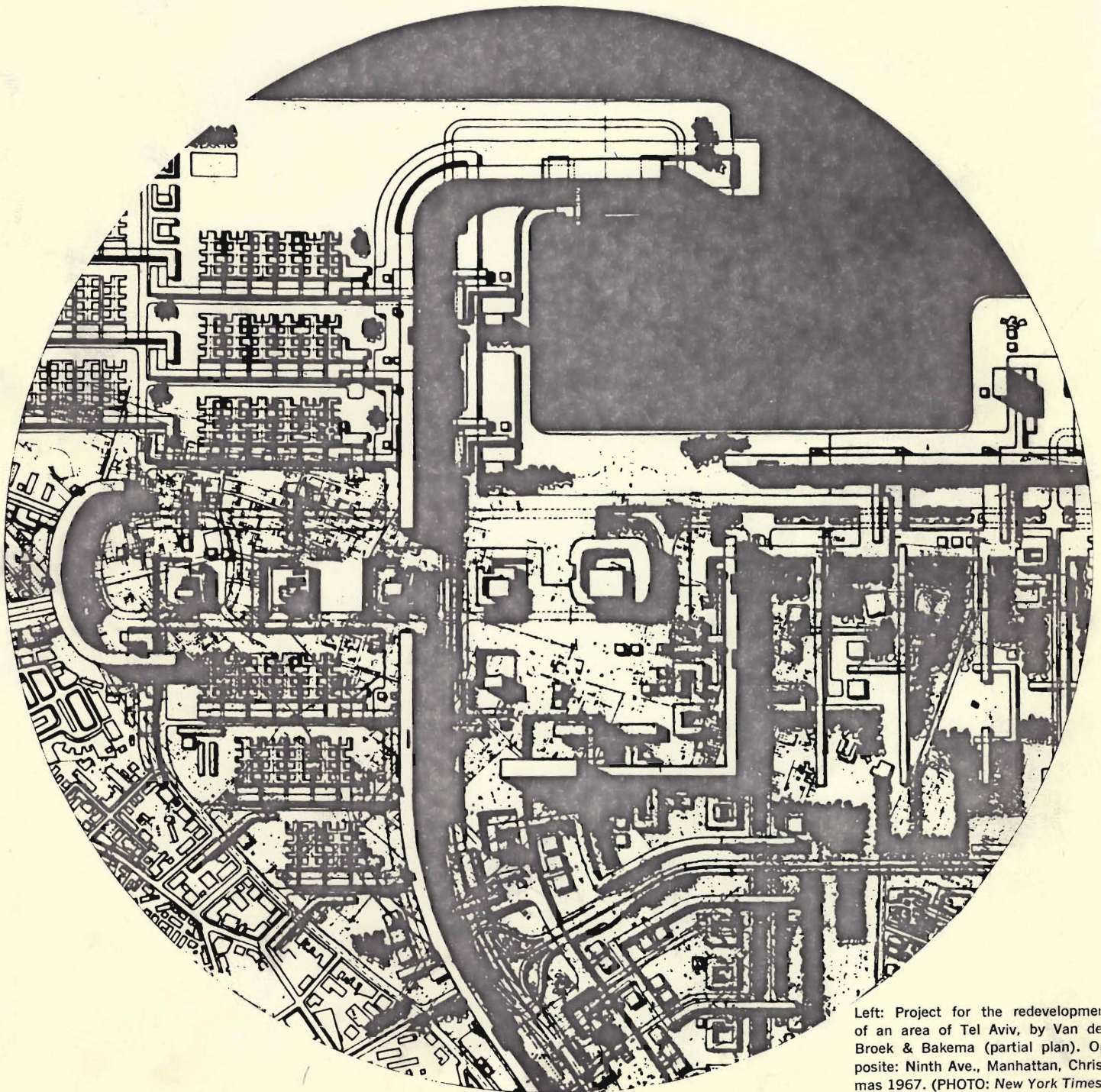
Because advanced construction materials and techniques are presently economically unfeasible, only conventional materials and building modes should be considered. In terms of longrange construction planning no really significant changes in either techniques or materials are foreseen in the Tampa Bay Region.

Tampa is fortunate in having both excellent concrete and masonry block manufacturing plants. Usage of both these materials has long been established in the Region. Contractors and workmen are also familiar with the techniques that are used in such construction.

The use of concrete and masonry block has two distinct advantages. The first is economy of construction. Second the continued usage of concrete and masonry block provides a unity in both materials and scale with existing buildings in the area.

C-9 BUILDING TYPES

URBAN FORM AND URBAN FUNCTION



Left: Project for the redevelopment of an area of Tel Aviv, by Van de Broek & Bakema (partial plan). Opposite: Ninth Ave., Manhattan, Christmas 1967. (PHOTO: New York Times)

JAN 68 FORUM

transportation

the extraordinary Grand Central complex described earlier in this issue is traversed by 500,000 people on every single working day. It is the equivalent of the total population of Memphis or of Cincinnati; and yet the core of "Grand Central City" manages to accommodate its transients within an area of less than ten acres. The reason Grand Central City functions so well, as pointed out on pages 48-55, is that this "city" was designed as if it were a single building—which, in effect, it has become. It was designed, and it grew, to become a single organism, in which all the numerable services required by the city were separated out from one another, but also meshed and integrated with one another; in which different transportation systems were all designed to interact, connect, but also to keep out of each other's way.

Unhappily, most of our real cities have been planned and built by what appears to be a delirium of schizophrenies.

If the analogy of "the city as a single building" holds true, then the single buildings that most of us inhabit would have elevators shooting up through corridors and air conditioning ducts that double as mail chutes.

For the pedestrian corridors of our cities double as horizontal distributors that convey everything from garbage to highly inflammable fuels—all carried in trucks that come barreling down these corridors, forcing mere humans to run for their lives.

These horizontal distributors of services don't only carry rambling trucks, of course; they carry an infinite variety of vehicles, all operating at different speeds and serving different needs: bicycles, motorcycles, private cars, taxis, buses—as well as trucks of every conceivable size and shape, and vehicles supposedly available (instantly) to assist in emergencies.

And to compound the confusion, there are not only vehicles that are meant to operate at different speeds, but also some vehicles that serve localized, neighborhood traffic, and others that serve interstate commerce. And

all are tossed into the same network of streets.

Any architect who managed in this fashion to mix up all his services in a single building would probably be disbarred. Yet those who shape our cities—public officials as well as private citizens—get away with this sort of confusion every day.

The analogy of the city as a single building can be carried still farther: much of the time, the "rooms" within our cities have been carefully distributed so that all those serving the same function are, generally, located in the same place. (This is about as intelligent as putting all the washrooms in a skyscraper on one floor—which would play havoc with the elevators, to mention only one likely result.)

Yet this is exactly the sort of "zoning" that has occurred in our cities, often by regulation, sometimes as the result of some sort of herd instinct. For example, in Manhattan all major theaters are located within a small area of a couple of dozen city blocks; and this concentration has, for many years, created spectacular traffic jams on every evening between 8:00 p.m. and curtain time. Indeed, on a Wednesday afternoon about a month ago, a combination of matinee-goers and office workers brought all traffic in the Broadway area to a full and seemingly permanent stop (right).

Yet, when someone determined the location of Lincoln Center, he proceeded to cram all of it into all of four city blocks! This concentration—five theaters, so far, in search of a nightly audience of close to 11,000 people—has, of course, had all the predictable results.

It seems unnecessary to cite additional evidence to show that the form of our cities and the flow of traffic within our cities are inextricably linked. The form of our cities can either facilitate or impede traffic; and the planning of transportation can either obstruct the city's growth, or direct that growth toward more desirable objectives. But what are the specific remedies now being advanced? For some of the answers, see the next six pages.



For old cities, a third dimension

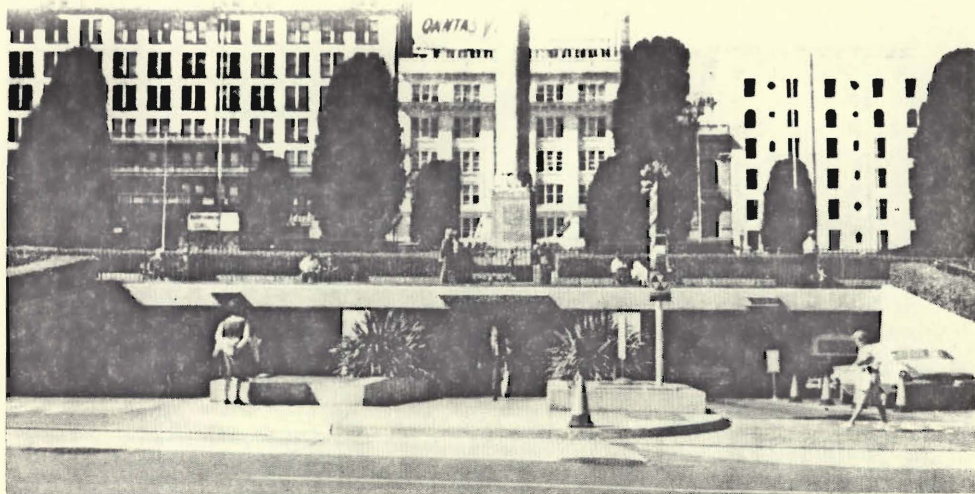
Numerous proposals have been advanced to make traffic in existing cities more efficient. In this discussion the emphasis will be on some of the more radical proposals made to date.

The first group of such proposals attempts to sort out different kinds of traffic and separate them. The most obvious categories are pedestrian and vehicular (with several sub-categories of vehicular traffic); and here are some of the ways in which such incompatible kinds of traffic might be separated from each other:

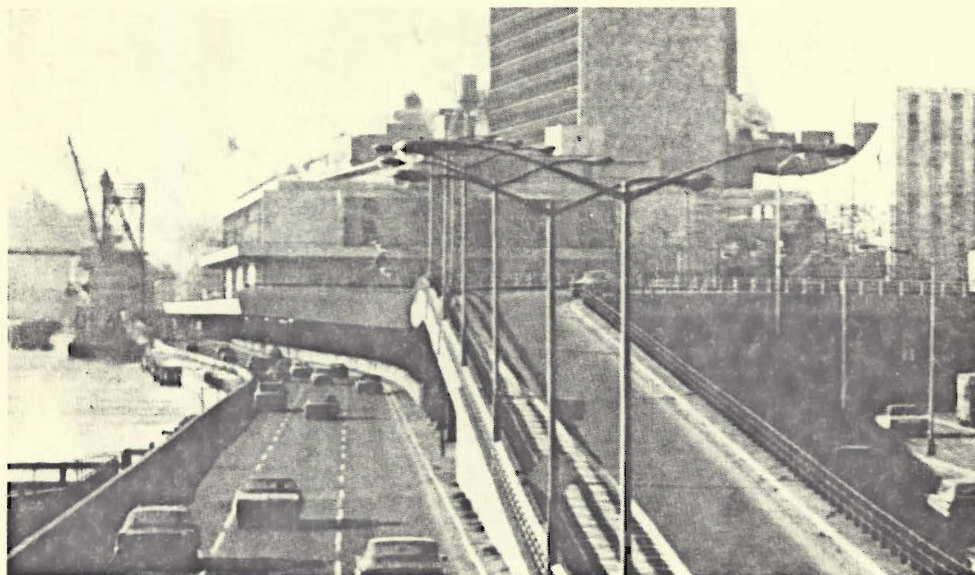
Separation by levels. Double-decking of streets or entire sections of cities is becoming increasingly common, especially in cities with steep changes in grade: in San Francisco (1) whole parking garages have long been secreted under public parks; in Manhattan, the UN Park (2) sits on a platform that cantilevers out over the East River and successfully hides the East River Drive; and elevated sidewalks are a familiar sight everywhere: this one is in the center of Stockholm (3).

Separation by grids. The closing of some streets to vehicular traffic, or the opening of pedestrian arcades through the middle of city blocks, has worked effectively in many places—e.g., London's Royal Arcade (4). A recent proposal by Barry Benepe extends this notion by superimposing a new pedestrian grid upon existing city blocks (5), which would be bisected by walks (6). Pedestrian crossings would be by over- or underpasses.

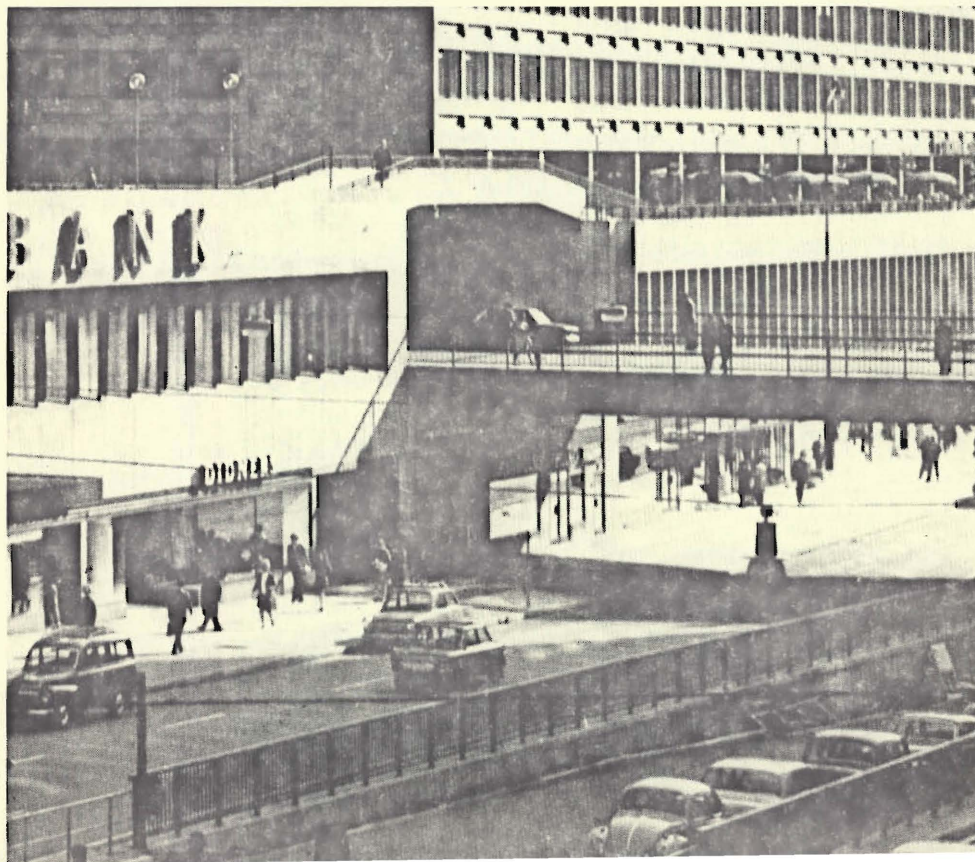
Separation by function. Systems like the Minirail can not only be elevated above existing streets or rights-of-way without interfering with traffic on other levels; they can also (as at the Lausanne Exposition of 1964) run under, over, or through buildings or city blocks (7), thus simplifying the location of stations and possibly establishing a diagonal mass-transit pattern that would reduce travel time in rectangular gridiron cities.



1



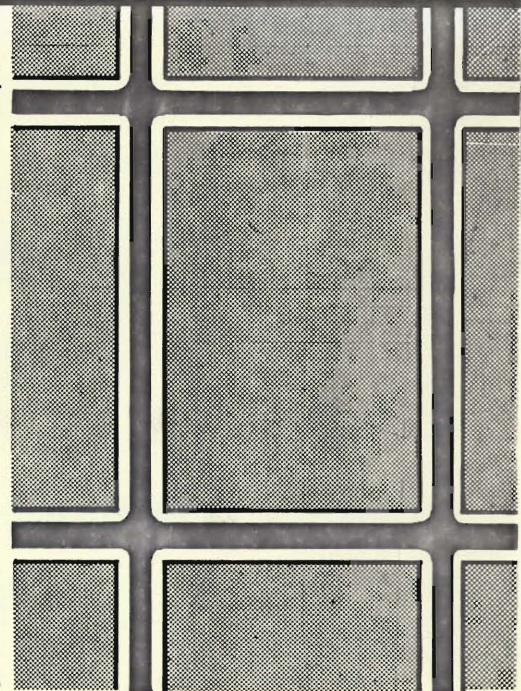
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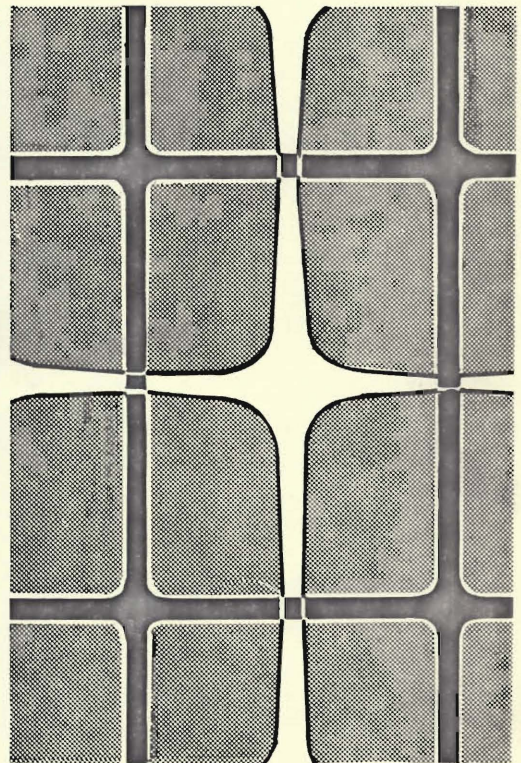


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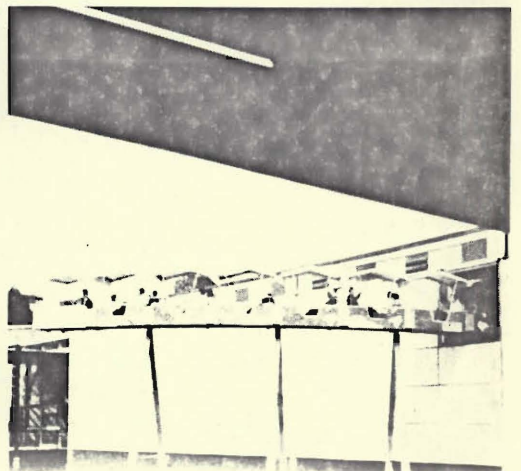


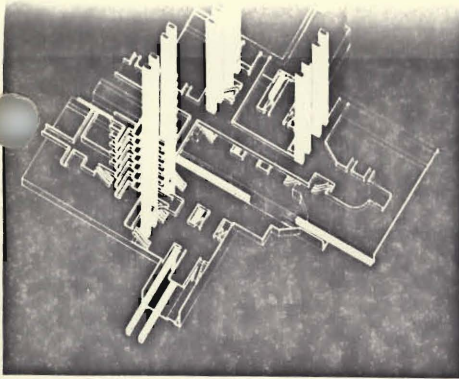
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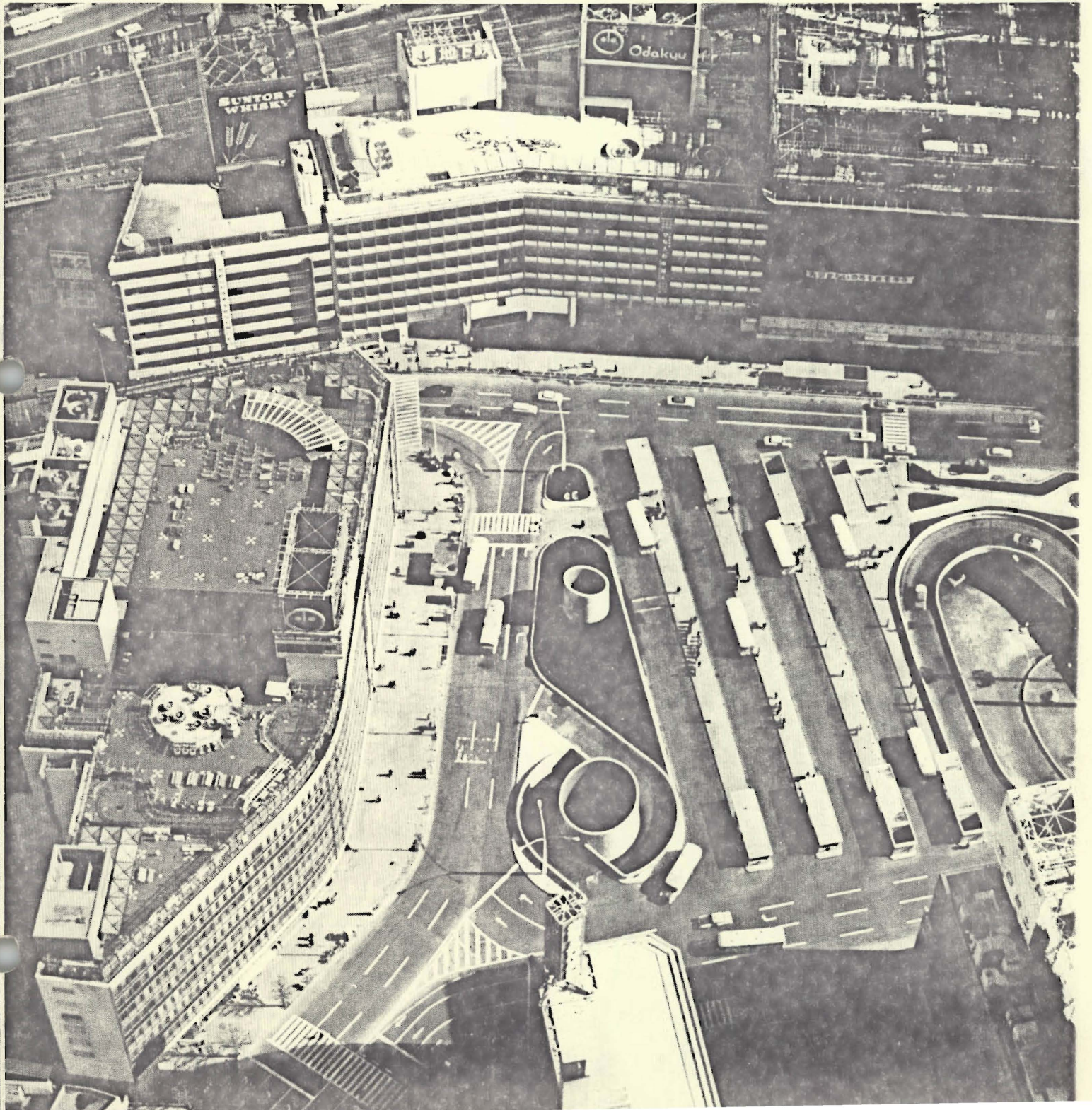
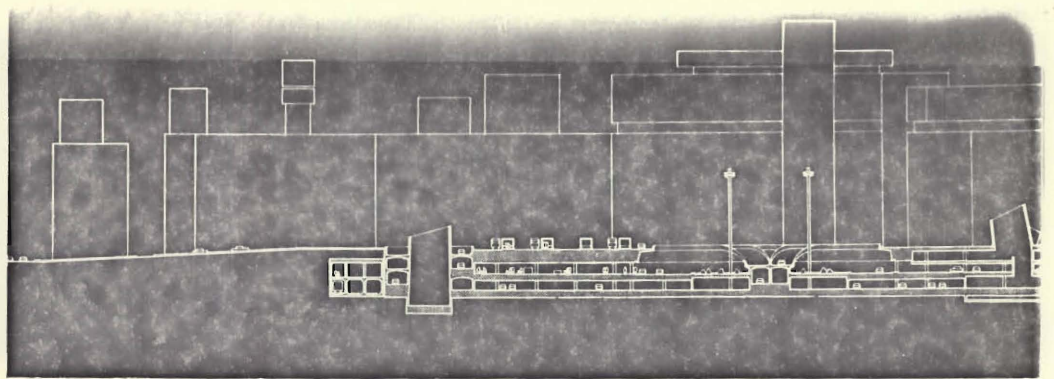


7





8



Integration, as well as separation

In addition to *separation* of different kinds of traffic, various suggestions for the *integration* of different transportation systems have been advanced:

Vertical integration. The "access tree" proposal (8) by the N.Y. Regional Plan Association (pages 62-67) to integrate vertical transportation systems with mass-transit facilities at basement level is a brilliantly simple concept, and one relatively easy to realize.

Multiple interchanges. Since most suburbanites have to switch from one mode of transport to another (and, possibly, to a third or fourth) during the trip from home to work in the CBD, the design of efficient and attractive interchanges, located in the right places, becomes crucial.

The likely scale of such multiple interchanges is suggested by the extraordinary new Shinjuku Center in Tokyo (9, 10), which combines, in one huge complex, a parking garage, railroad station, bus terminal, pedestrian shopping concourse, subway and monorail stops, as well as office buildings. The architects were Junzo Sakakura Associates.

For new cities, a new architecture

Much more radical solutions have been advocated for traffic flow in *new* cities.

One of the earliest examples, undoubtedly, was the "Roadtown" proposed in 1910 by Edgar Chambless (11). Le Corbusier's 1930 scheme for Algiers (12) is a modern version: a new city in the form of a single building, that would carry a continuous highway on its roof, and would contain several levels for localized automobile traffic and pedestrian circulation down below.

The scheme pointed the way toward a new kind of urban organism, in which buildings and the transportation links that connect them would be merged in huge megastructures.

Since Le Corbusier's project for Algiers, similar proposals have been advanced and built in Japan (13) and elsewhere.

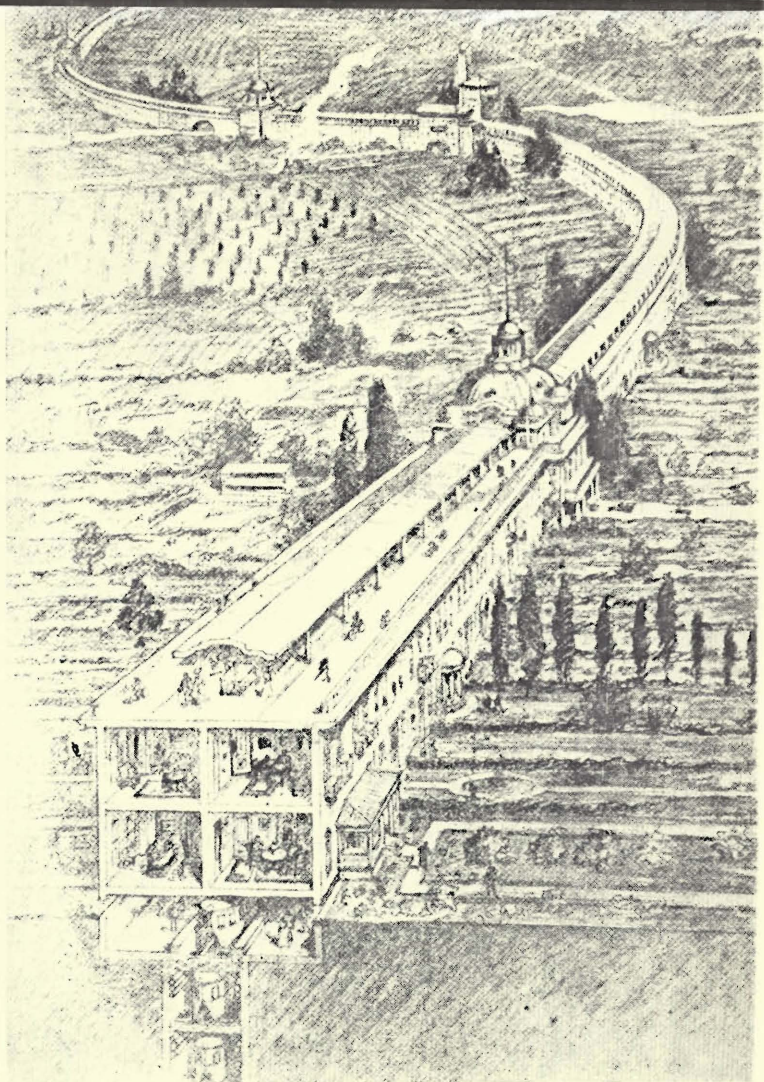
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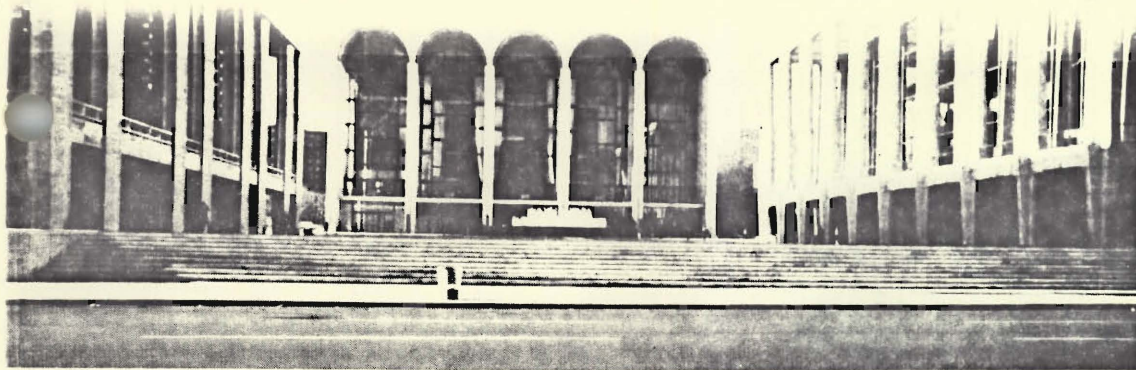
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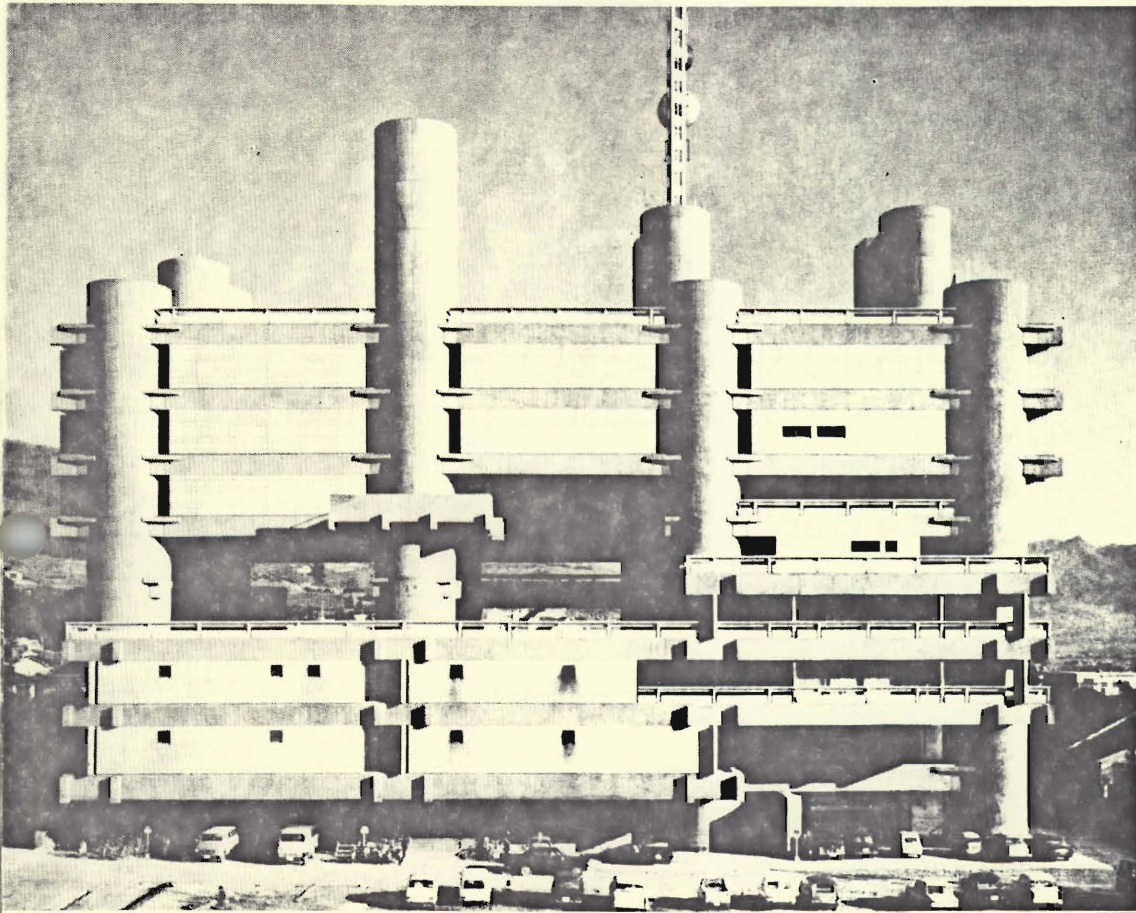
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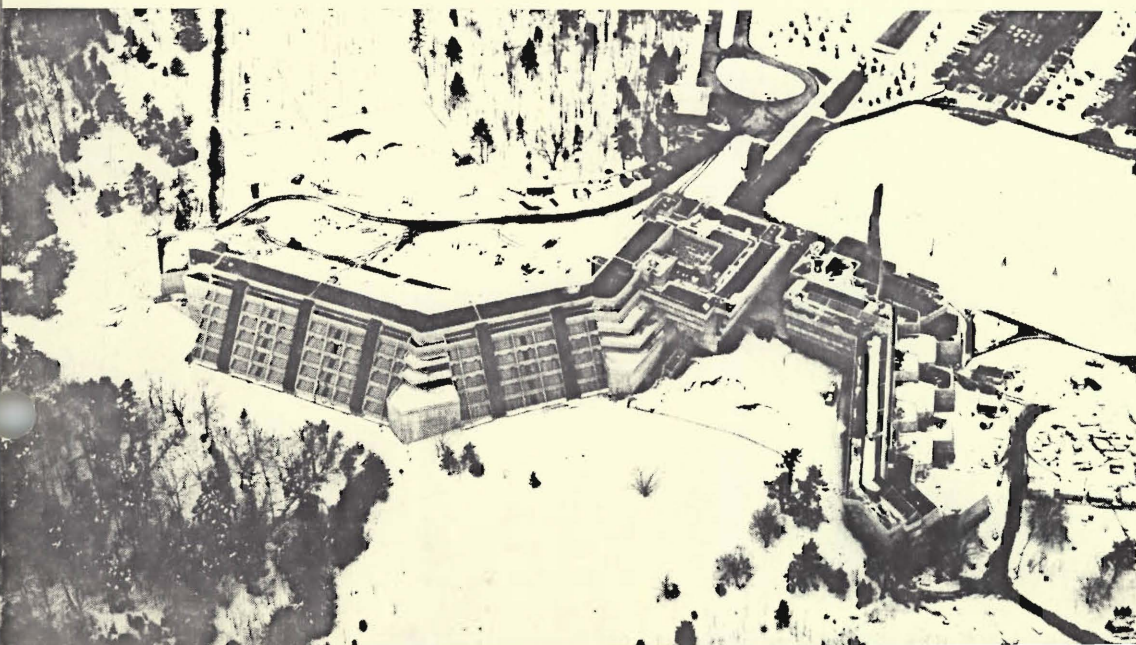




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16

Movement as a generator of urban form

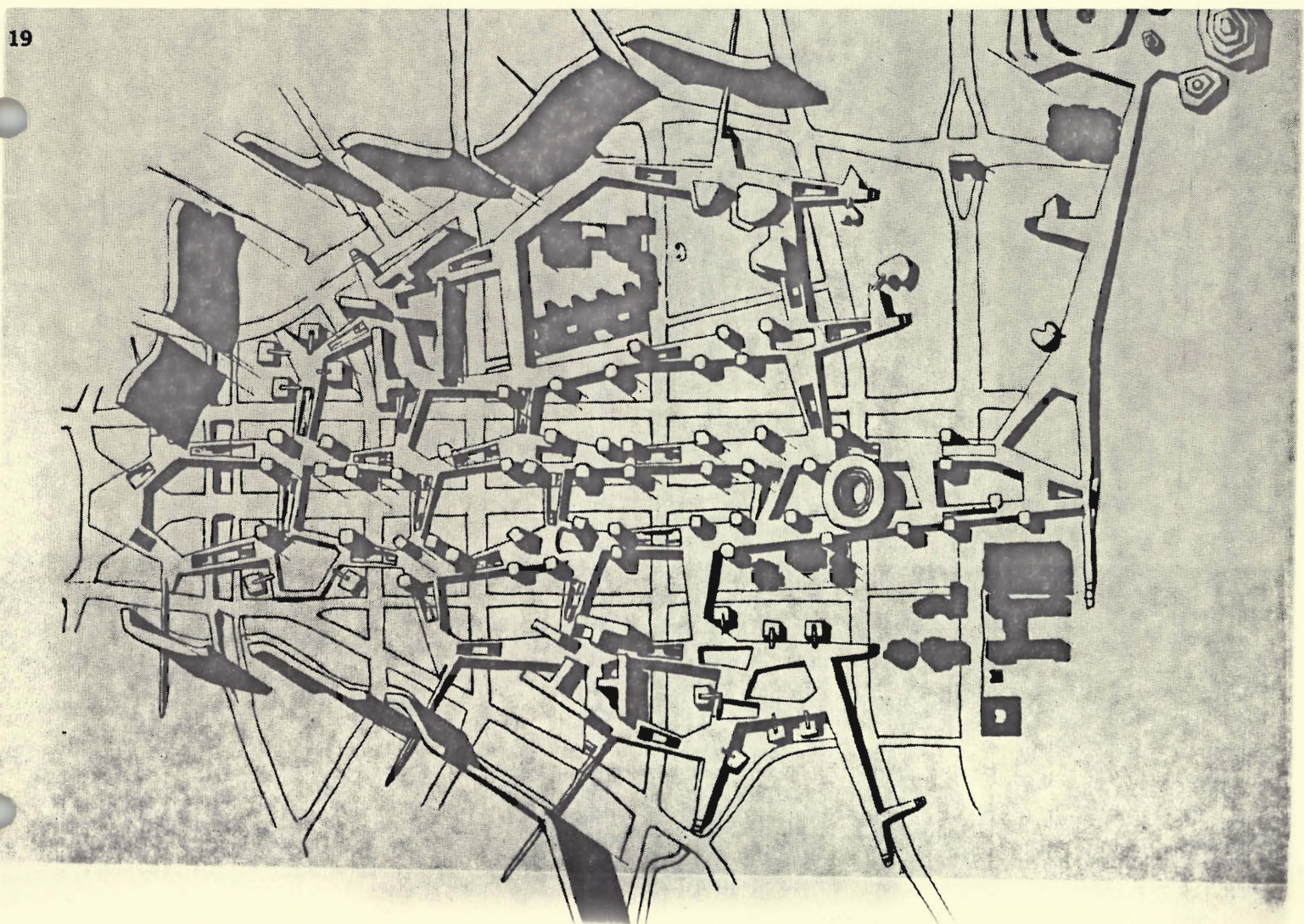
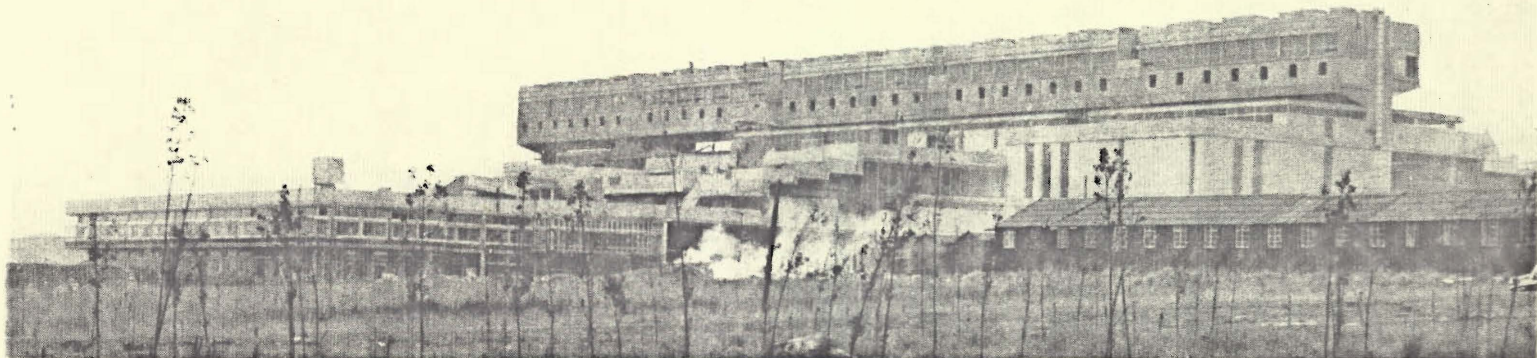
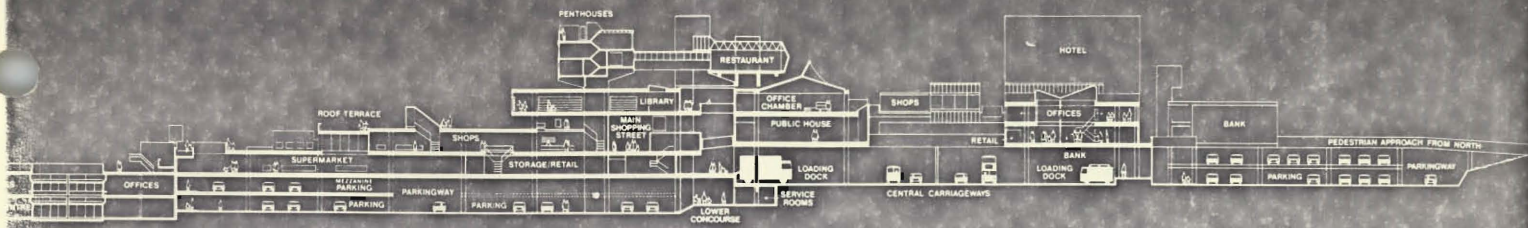
The megastructures envisaged by Le Corbusier and others have two things in common: they are open-ended, and they are fluid. **Open-ended buildings.** Just like the transportation network of which they will be a part, the buildings for new cities will tend to be designed to encourage and welcome growth and future change, rather than reject it. The essential difference of such megastructures from traditional architectural form may be found in a comparison of, say, Lincoln Center (14) with Kenzo Tange's Yamanashi Building (15); the former is static, hardly capable of accepting change; whereas the Yamanashi Building is dynamic, flexible, designed to accept, indeed to welcome change.

Fluid buildings. The new structures may tend to reflect the flow of traffic—as does John Andrews' Scarborough College (16), a small megastructure built along the route of a multilevel interior street. Tomorrow's larger megastructure may also contain highways and mass-transit facilities—in short, the new megastructures are likely to be buildings that are also streets, as the center of the new town of Cumbernauld, Scotland (17, 18).

Quite clearly, what these new concepts will do is to liberate urban form from the traditional plaza-and-boulevard concepts of the past. The structuring of cities will be dictated by the more efficient and pleasant flow of traffic. The multilevel project for Berlin (19), by Alison and Peter Smithson, demonstrates this kind of structuring, where buildings of varying permanence and quality may be "plugged in."

It is in the nature of the new urban organisms that they will supply only the substructure that will make cities function in tomorrow's world. What will actually meet the eye is anybody's guess—and perhaps not as important as one once thought.

PHOTOGRAPHS: (3) A. G. Annerfer; (15) Shigeo Okamoto; (16) John Reeves; (18) John Donat.



It is a planners' dream—a long sliver of an island located in the narrow channel of the East River in New York City. It has magnificent views of the Manhattan skyline, immediately to the west and not-quite-so-magnificent views of Queens immediately to the east. Welfare Island, with its long history as a repository for unpleasant functions—scandalous prisons and mental hospitals, has been pretty nearly deserted since 1950.

Welfare Island is about 2 miles in length and about 800 ft. wide at its widest. At its northern and southern tips remain two functional and efficient hospital units which care for long-term and chronically-ill patients, taking up about 37 of the island's 147 acres. The remainder is dotted with decaying buildings worthy of preservation as landmarks, decaying buildings unworthy of preservation, and a training school for firemen.

New York's ravished *Ile de la Cité* could become a great resource to the city and to the region and numerous proposals of varying appeal and practicality have been brought forth in the last 20 years. Propositions have called for a high-density housing development, a park, an amusement park, industrial use, prison use, expanded hospital use, and combinations thereof.

Past development proposals have been impeded by limited access to the island. A vehicular bridge from the Queens side was completed in 1956. The 59th Street Bridge from Manhattan to Queens crosses the southern portion of the island, with elevator service from the bridge to the island providing pedestrian access. But a new subway tunnel, now in the works, will place a station on the island, making it immediately accessible within minutes of midtown Manhattan.

In January 1968, New York's Mayor John V. Lindsay decided to confront the problem of the island and its development with his appointment of the Welfare Island Planning and Development Committee. This committee submitted a 141-page report to the Mayor in February 1969—a thoroughly-researched document which suggested the retention of the two hospitals, relocation of the training school, creation of a mixed-income residential community of 20,000 and supporting public facilities, and provision of major park areas.

In March the New York State Urban Development Corporation commissioned a team headed by Architects Philip Johnson and John Burgee to prepare a master plan for the island. The Johnson-Burgee plan, unveiled this month at an exhibition at The Metropolitan Museum of Art, compacts the residential and public facilities in a two-part town center located adjacent to the new subway stop, so that meaningful open spaces could be created. The plan is purposefully schematic and architecturally nonspecific—the planners' main concern being to establish a framework to preserve the romantic insular quality of the site.

Main Street and new town

The only street in the new town, Main Street, runs south from a new parking garage located adjacent to the exit of the bridge from Queens. It will be served by a so-called minitransit system. Pedestrian and vehicular traffic will share the same road; private cars will not be permitted on the island.

"This is not a multilevel town," says Philip Johnson. "I'm too Jane Jacobs for two levels. In every two-level town that I have been in, one level is good and one isn't. In Montreal, all the action is down below; nobody walks in that square. You might just as well put a roof over it. In Hartford, nobody goes up to that second level."

Main Street is the physical spine of the town, and it bends through the residential section, purposely angled to present a sequence of experiences, and views. Pedestrian walkways run from river to river and offer extended vistas.

The island town is composed of two parts separated by a park. To the south of the park is the town center: a dramatic glass-roofed arcade connecting two major public spaces, the harbor facing Queens and the town square looking towards Manhattan. The arcade and town center will contain schools, hotel, office space, and some housing and other amenities (see page 44).

To the north of the park will be most of the 5000 residential units terraced down from Main Street to the water. The housing will change in height from up to 12-story apartment buildings along Main Street (where there will also be neighborhood shops

and facilities) to double-maisonette townhouses near the water's edge. The group of buildings will be "horseshoe"-shaped, around courts opening to views of the river.

Thirty per cent of the housing units are to be low-income—with one third of these designed for the elderly; 25 per cent will be moderate-income; 20 per cent will be middle income; and the remaining 25 per cent will be conventionally financed.

Parks and open spaces

The planners were concerned with the shaping and control of exterior space.

In the ecological park to the north of the town, various environmental conditions of the city and region are re-created—hills and depressions, swamps, grass, flowers and rock outcroppings, all interconnected by paths. And interspersed throughout the island will be restored buildings, relics of other eras.

The parks on both tips of the island will afford spectacular views of the river and the Manhattan skyline. On the southern tip is a 12-acre park, screened from the hospital complex by one of the preserved buildings. On the northern tip is a terraced recreation area facing up river past a 19th-century lighthouse, preserved in the plan. The six-acre sports park to the south of the new town under the 59th Street Bridge will have a baseball diamond and basketball courts.

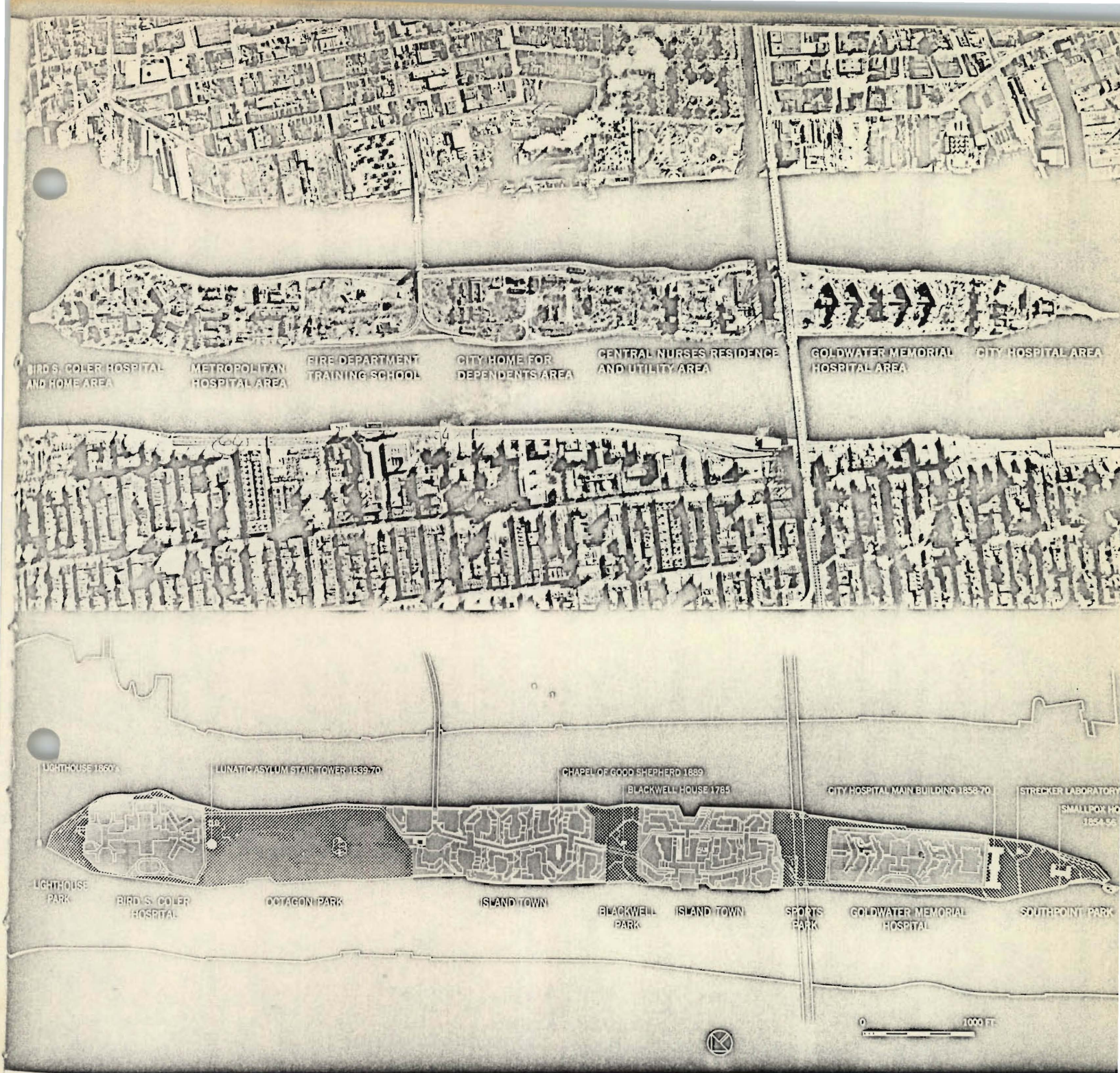
A grand promenade

Another major factor which shaped the plan was keeping the water's edge public; and thus a grand pedestrian promenade is planned to skirt the perimeter of the island. The promenade provides a variety of experiences as it dips down frequently to the water. It contrasts places having more activity with places of less activity, and varies the spaces along the path from wide to narrow. "This whole thing was designed not from a formal point of view," say the architects, "but from the promenaders' point of view. This is going to be the most extraordinary promenade in the world—4 miles of waterfront is quite a varied effect."

Mr. Margolies, a free-lance writer, is the author of "Multimedia Zoo," in the June issue of *Forum*.

Welfare Island NEW TOWN FOR NEW YORK CITY

BY JOHN S. MARGOLIES

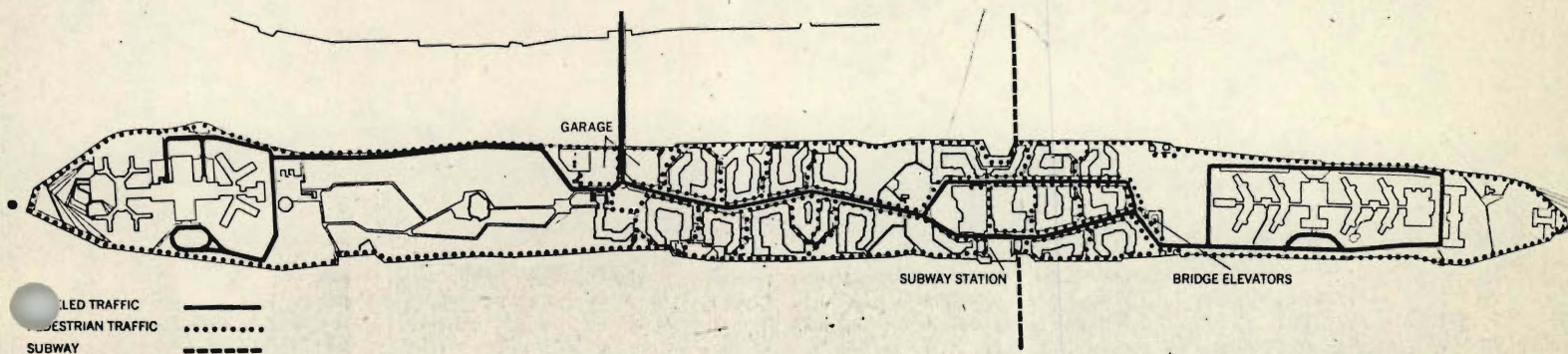
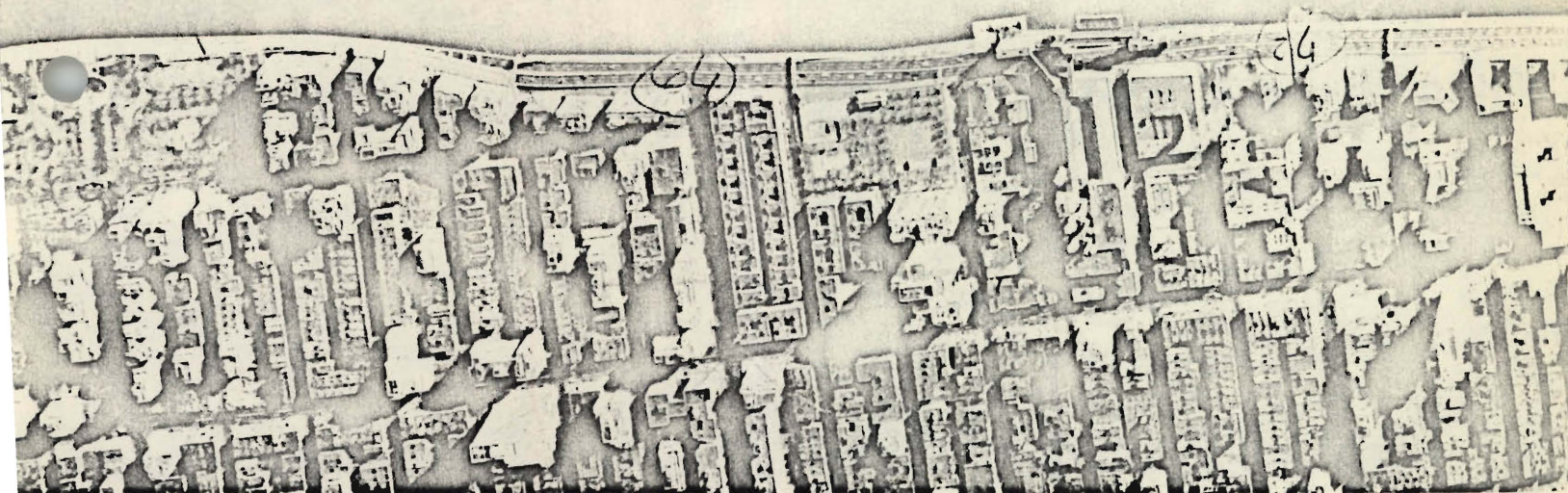
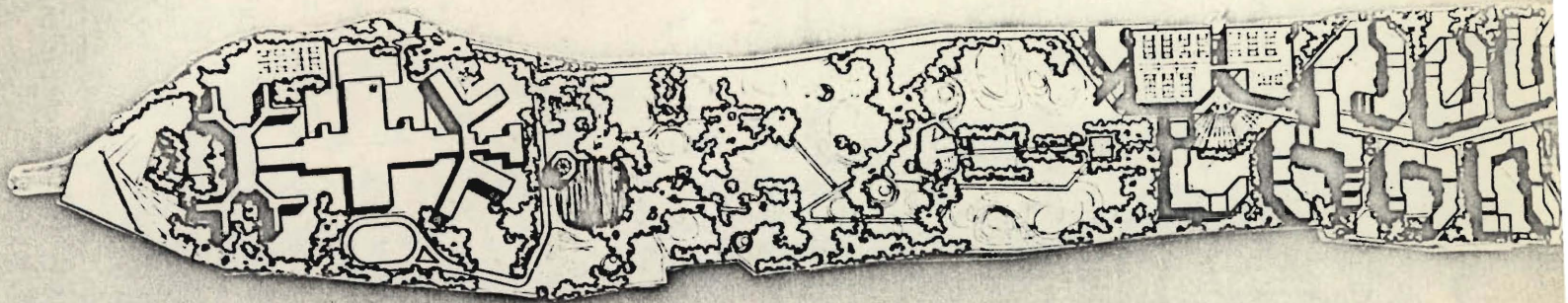


Before and after: The present Welfare Island, top, contains two functional hospital units at its northern and southern extremities. Between them are about 100 acres, all but deserted except for a fireman's training school, some connected facilities, and crumbling ruins of deserted institutions. Above is the development plan for the island prepared by a team headed by Philip Johnson and John Burgee, architects. The Johnson-Burgess plan centrally locates a 5000-unit residential community and public facilities in a two-part island town enclosing a town park. The island town is flanked on either side

by city parks—a six-acre sports park to the south and a 25-acre ecological park to the north—isolating the hospital complexes at either end, which are retained in the plan. A grand pedestrian promenade along the water's edge will skirt the perimeter of the island, encompassing new park developments at both tips of the island. The Johnson-Burgess plan exploits the unique insularity of the site and its breathtaking, panoramic views of the Manhattan skyline and the river. Some of the fine, old, deserted buildings will be preserved and restored as tangible symbols of the island's past.

FACTS AND FIGURES

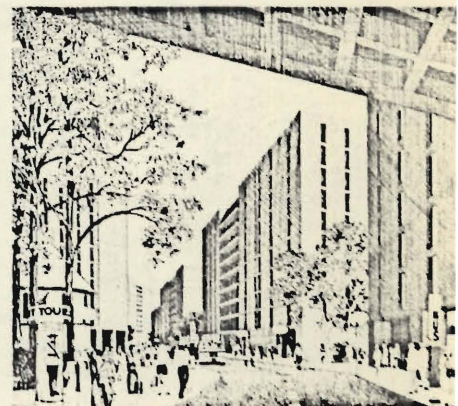
Proposal for redevelopment of Welfare Island for The Welfare Island Development Corp. (Benno C. Schmidt, chairman; Edward J. Logue, president). Architects: Philip Johnson and John Burgee. Consultants: Henry-Russell Hitchcock (architectural historian); Ammann & Whitney (structural engineers); Burns & McDonnell Co. (mechanical and utilities engineers); Allan M. Voorhees & Associates (transportation engineers); Zion & Breen (landscape architects); Seymour Jarmul & Bernard Brizee (housing advisors); Clarence F. Wicker (waterfront and bulkhead engineer).

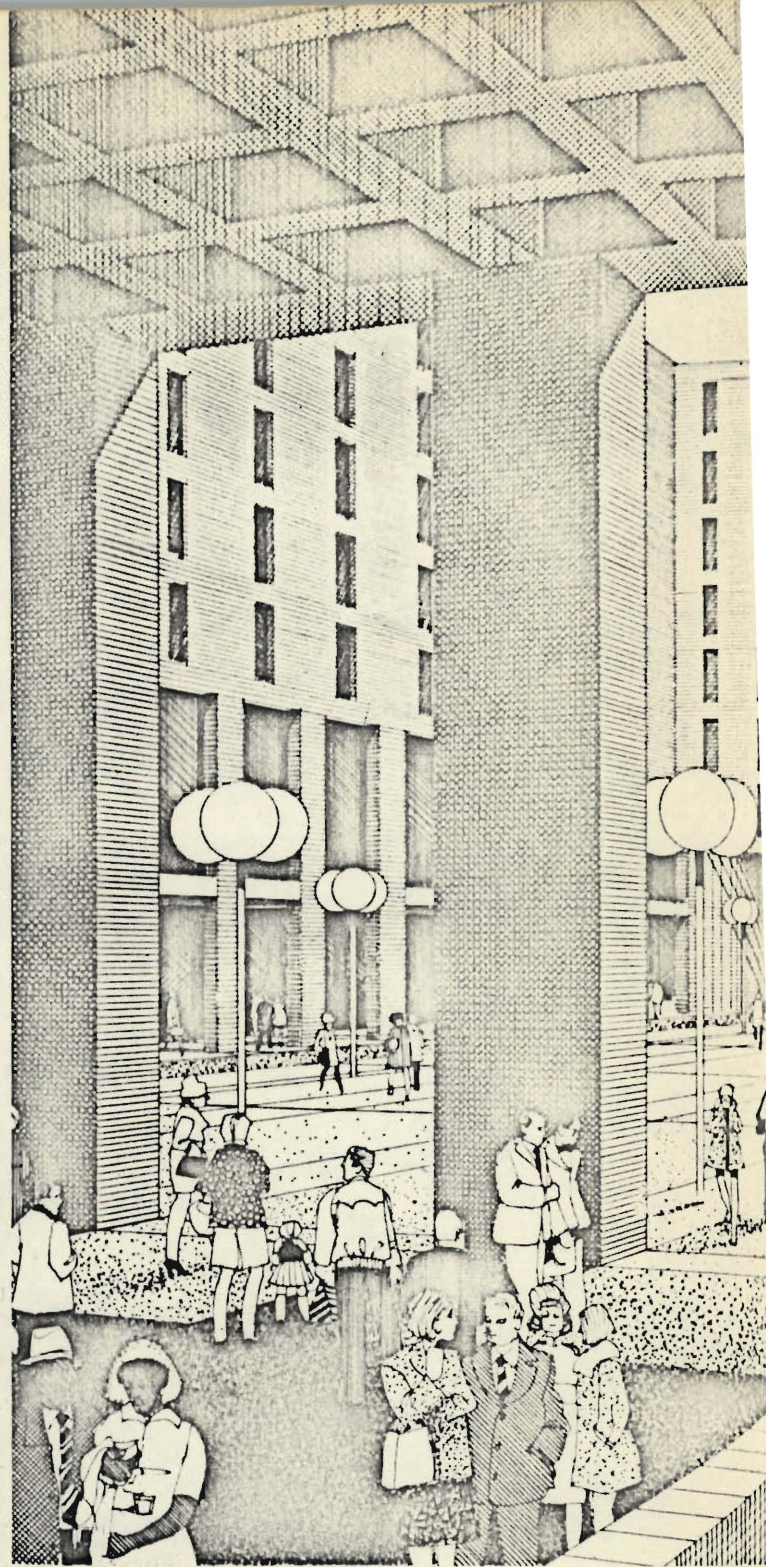
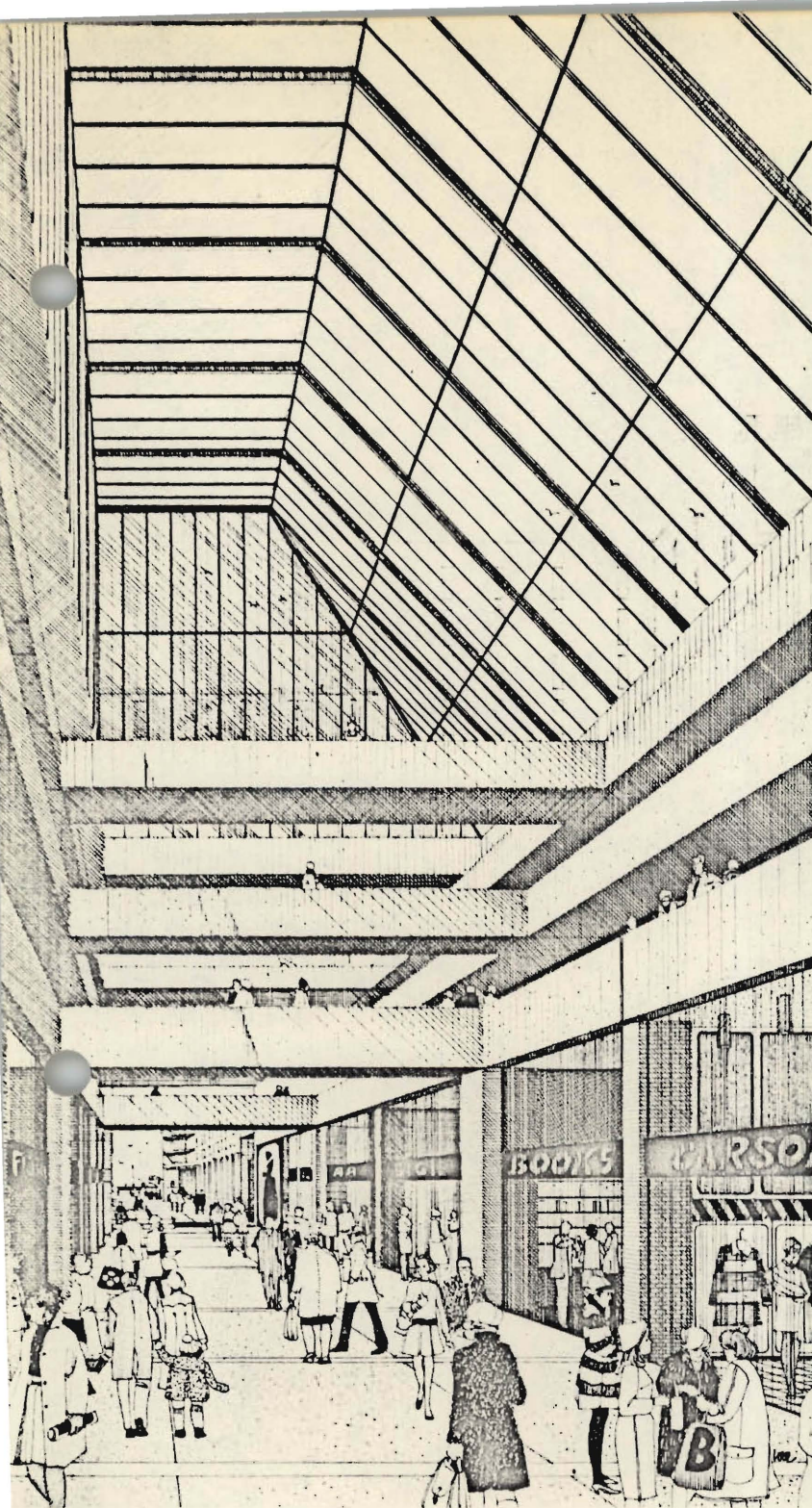




Private vehicles will be excluded from the island in the Johnson-Burgee plan. A motorist entering the island from an existing bridge will park his car in a new, multilevel, 2000-car garage located at the northern part of the residential community. The motorist will then transfer to a minitransit system which runs down Main Street, the only street on the island. It is the physical spine and organizing theme of the town. As seen in the transportation diagram at left, Main Street wends its way south through the northern residential area and then splits in two as it passes through the southern part of

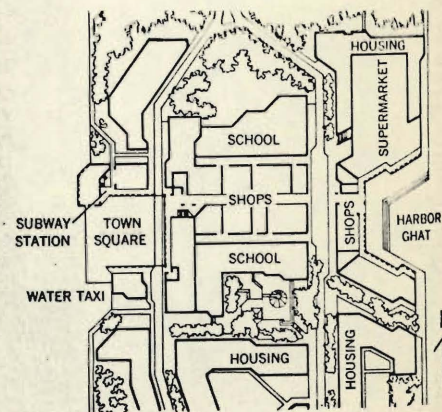
the island town. Apartments and townhouses are terraced up from a low four stories near the waterfront to a high 12 stories along Main Street. The apartment houses are arranged around U-shaped courts opening out to the water. Main Street, seen in the rendering at right, is dotted with neighborhood facilities, and it is not straight and monotonous. "It is bent," say the architects, "so there will not be an endless feel to it. Main Street is meant to always be an enclosed space, and to further this sense of enclosure, apartments bridge the street in two instances."

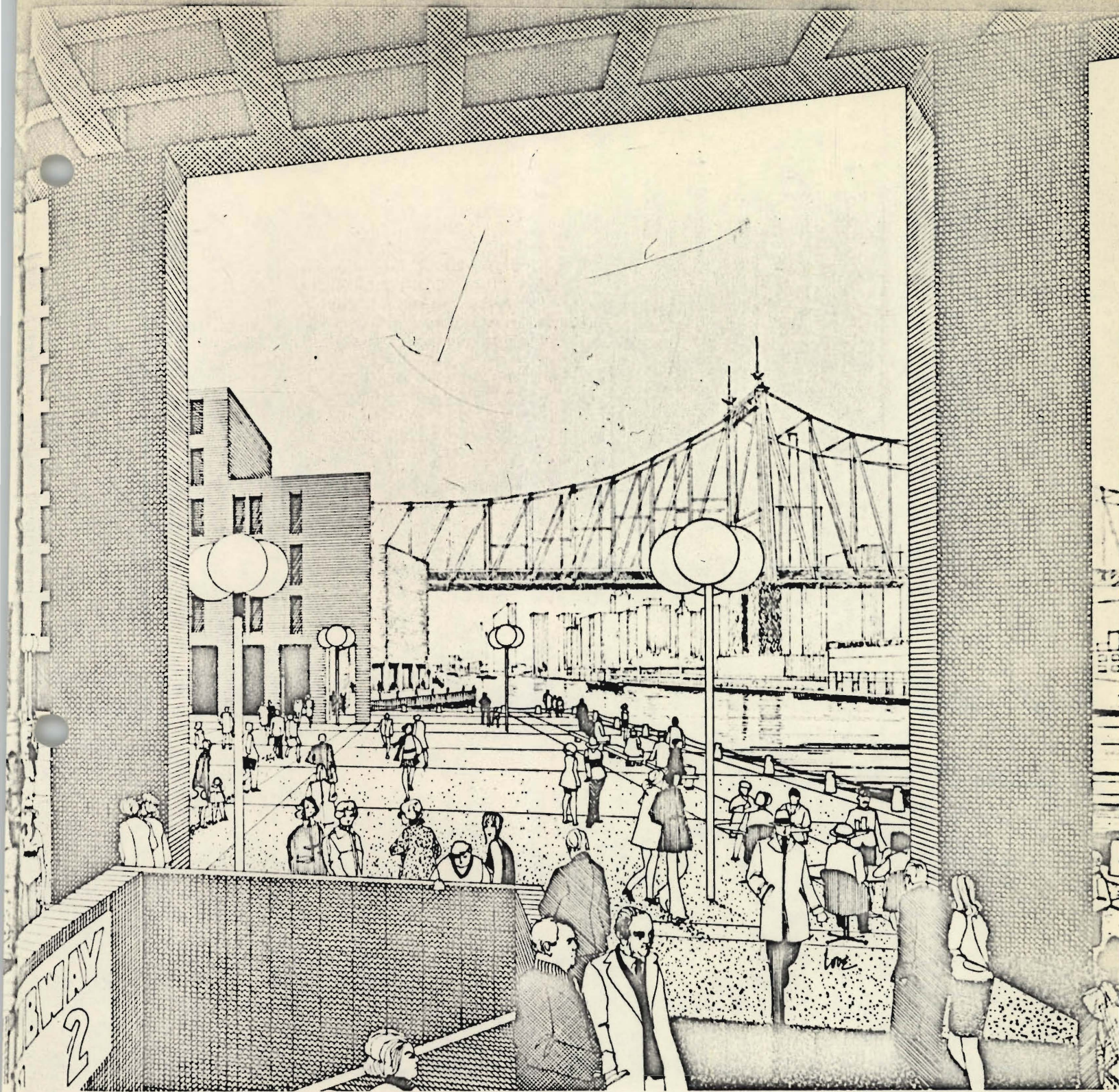




The focal point of the new town will be the town center with its public facilities, shops and waterside restaurants. The center is organized around a glass-roofed arcade, 20 ft. wide, 75 ft. high, and 300 ft. long, across the island. The arcade will open out at both ends into colonnades surrounding open plazas, with each end served by a minitransit stop. On the Manhattan side is the town square (shown in the rendering above), a 150- by 150-ft. pedestrian plaza with the new subway stop located below. On the Queens side is the harbor, an open-armed colonnade stepping down to the river. "In my

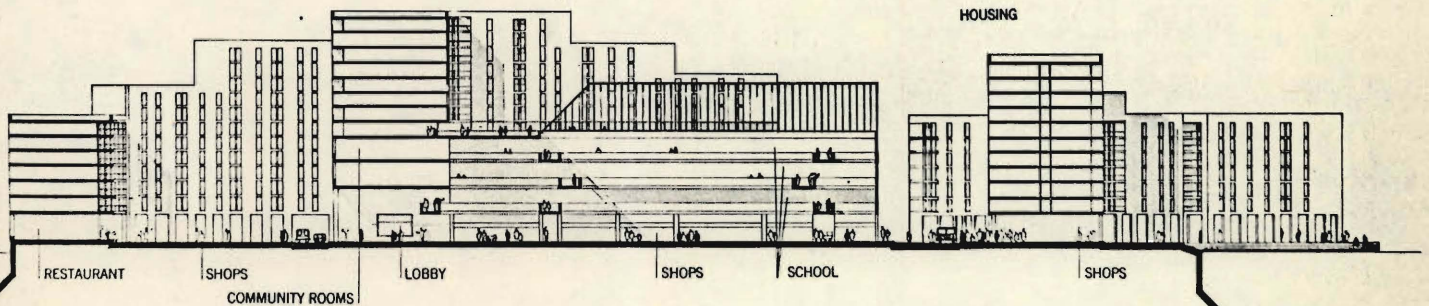
opinion," says Philip Johnson, "it's the whole dumbbell that's the important thing—the things that you arrive at on each side of the arcade. What people forget when they say how wonderful to have a *galleria*, is that the *galleria* is no good unless it's going from someplace to someplace." The island town is intentionally a dense development. The arcade is the principal shopping center, and it is bridged above by links between school facilities located on either side. Also in this complex will be a hotel, family clinic, swimming pool, fire house, branch library, and 200,000 sq ft. of office space.



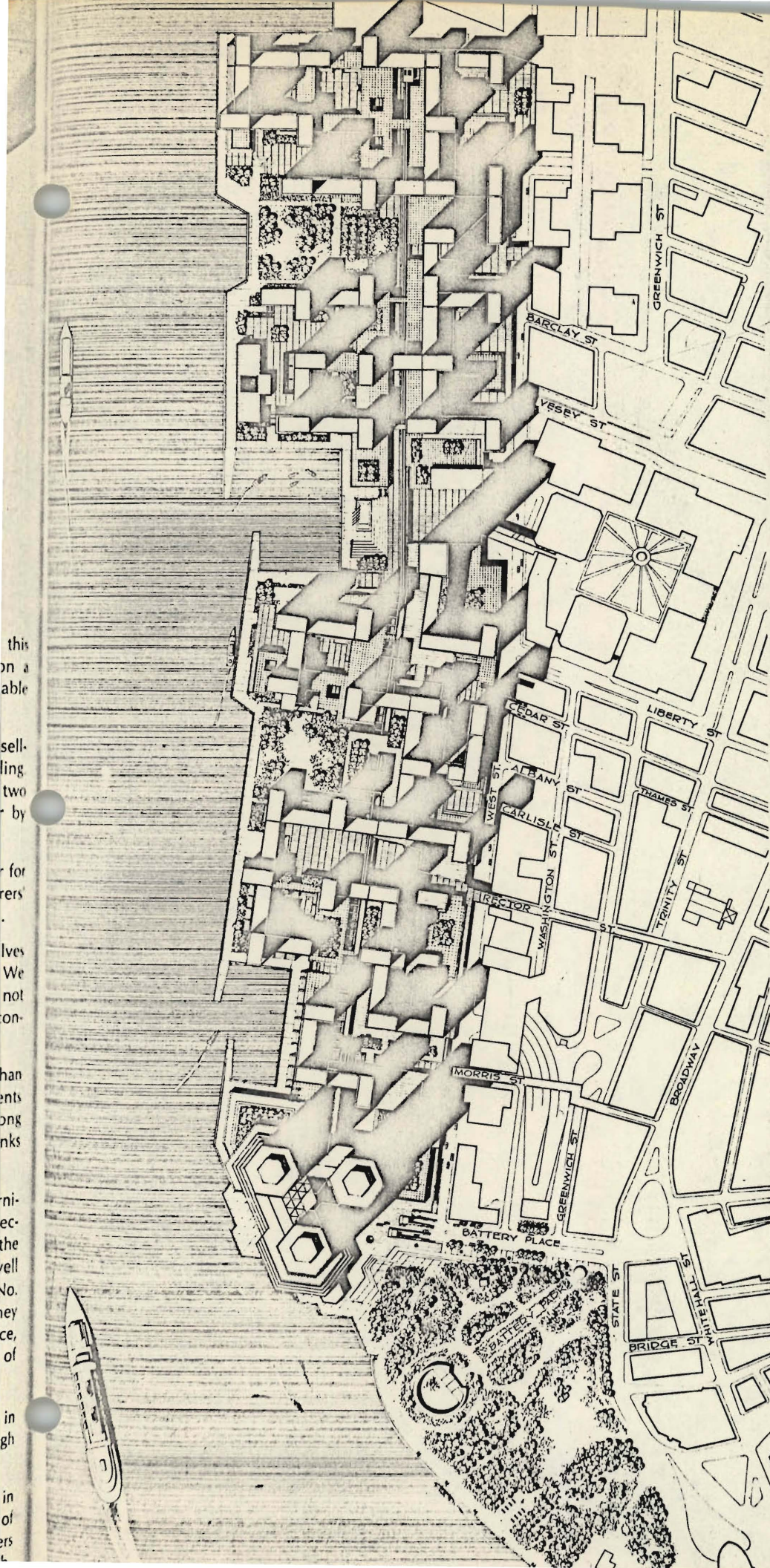


HOUSING

HOUSING



EAST-WEST SECTION



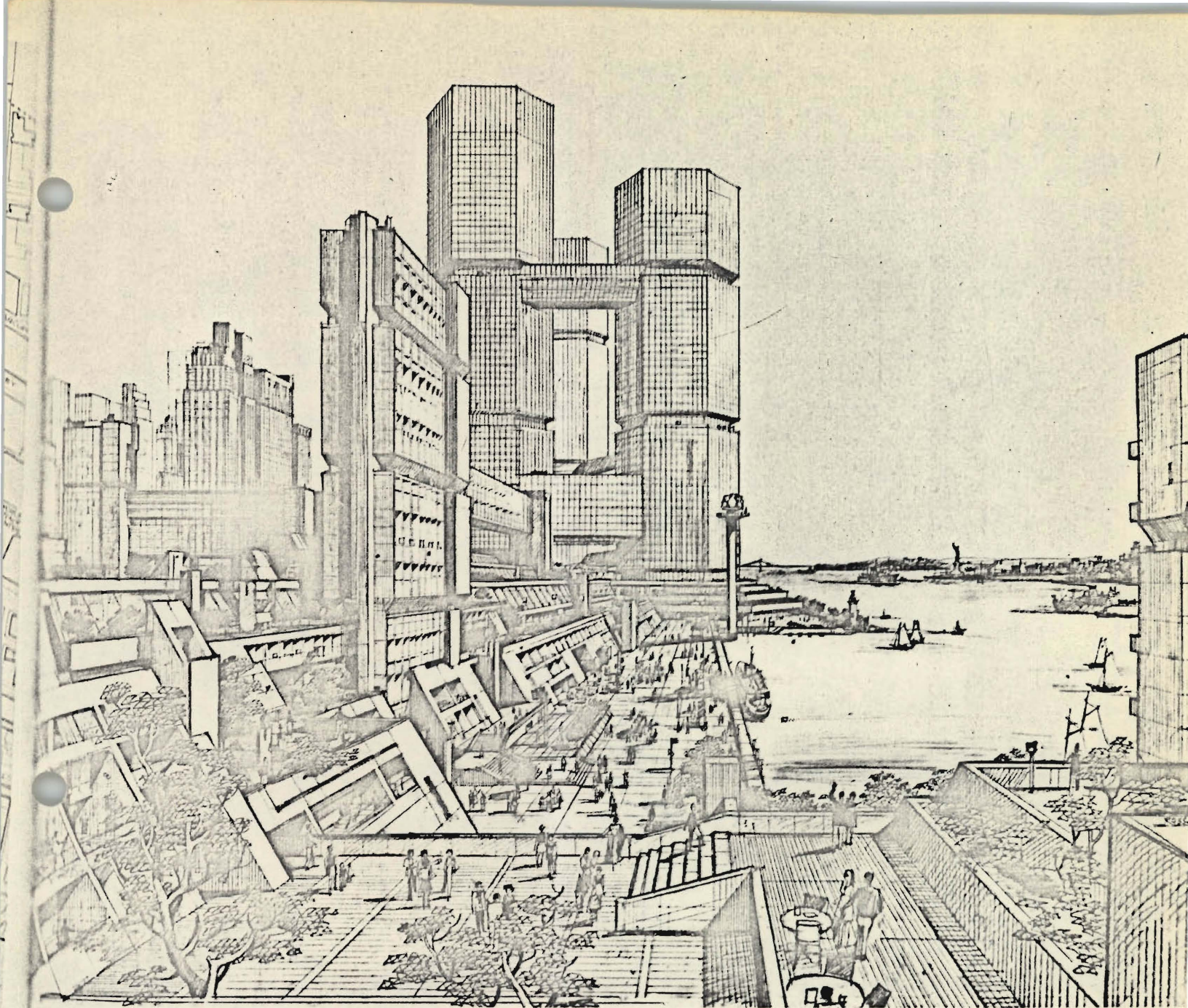
Thomas Airviews



Battery Park City:

A proposal for new housing,
new jobs, and new land . . .
perhaps a new kind of urban life

Battery Park City is a sweeping proposal for the revitalization of a portion of our largest city, launched by both Nelson Rockefeller and John Lindsay as the largest urban development project in the history of the country. It will be located in what is now a portion of the Hudson River (see aerial photo, above) on filled land between Battery Park and Chambers Street in lower Manhattan. The two agencies principally involved in its creation have been New York City's Office of Lower Manhattan Development, and the Battery Park City Authority, created by the State Legislature in 1968 as a public, non-profit corporation for the purposes of directing and financing the development of the site. Under these two groups, the present design and master plan



At left are three of the 12 maps which help define the intent and limits of the project. Above is a perspective looking south from one of the coves, and focusing on the three hexagonal office towers. The Statue of Liberty and Verazzano Narrows Bridge are in the distance.

John Burgee, and Conklin & Rossant.

As now conceived, and as presented to the public in the press brochures, Battery Park City's statistics are impressive:

- 91 acres of new land created. The total area of the project will be 118 acres, after the West Side Highway is lowered and its air rights developed as the final stage.
- Five million square feet of new office space.
- 19,000 new apartment units for 55,000 residents. Two-thirds of these are to be conventionally financed by private development and will almost certainly be high-rent apartments. One third will be subsidized by either the state or Federal government for middle- and low-income occupancy.
- 35,000 jobs created—30,000 in the new

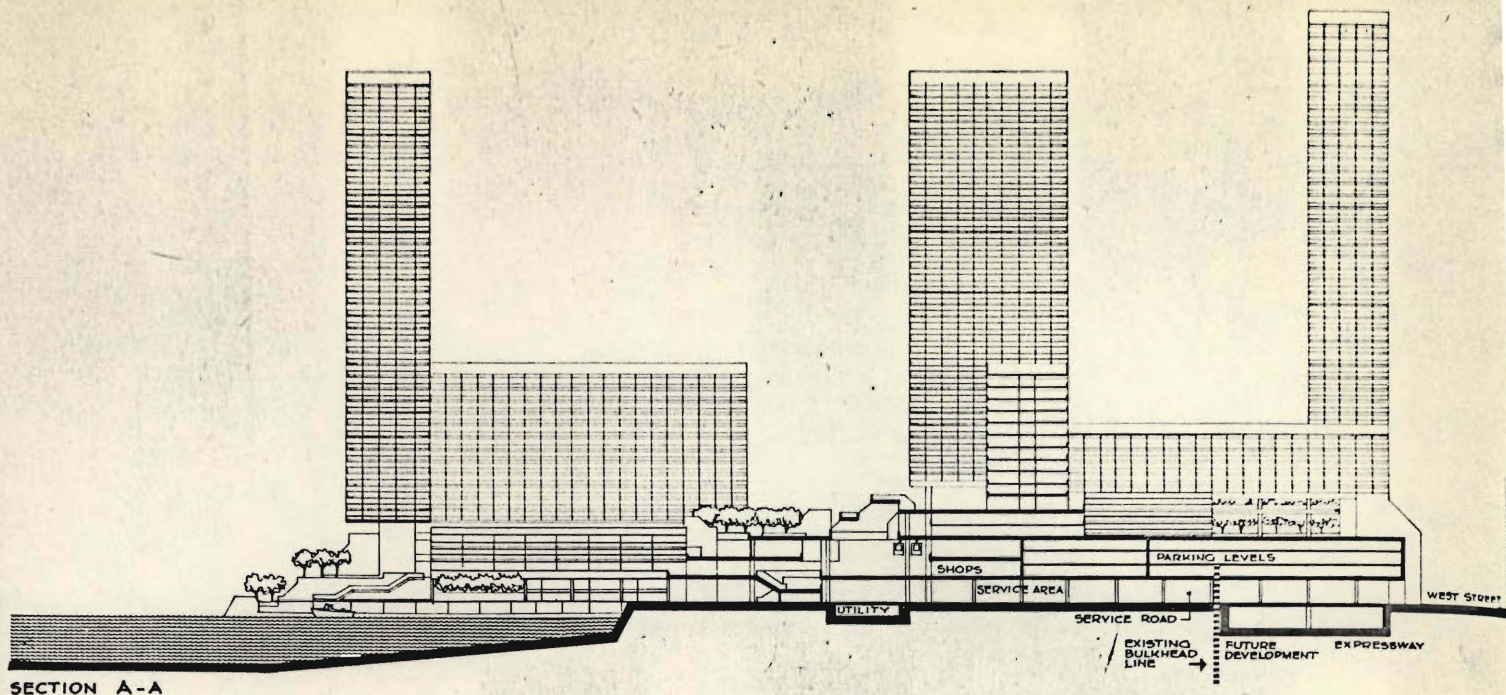
work force in a city the size of Schenectady or Troy.

- Total cost: more than \$1 billion. As estimated: \$300 million for office and commercial buildings, \$500 million for housing, \$100 million for sinking the West Side Highway, and \$150 million for landfill, planning, administration, and civic facilities.
- Cost to New York City: \$100 million for putting the highway underground.
- Revenue produced for New York City: between \$25 million and \$35 million annually, upon completion of the project. Lesser amounts while construction proceeds.
- Projected final completion: early 1980's, with some portions complete and producing revenue by 1974.

Sweeping schemes for renewal of our

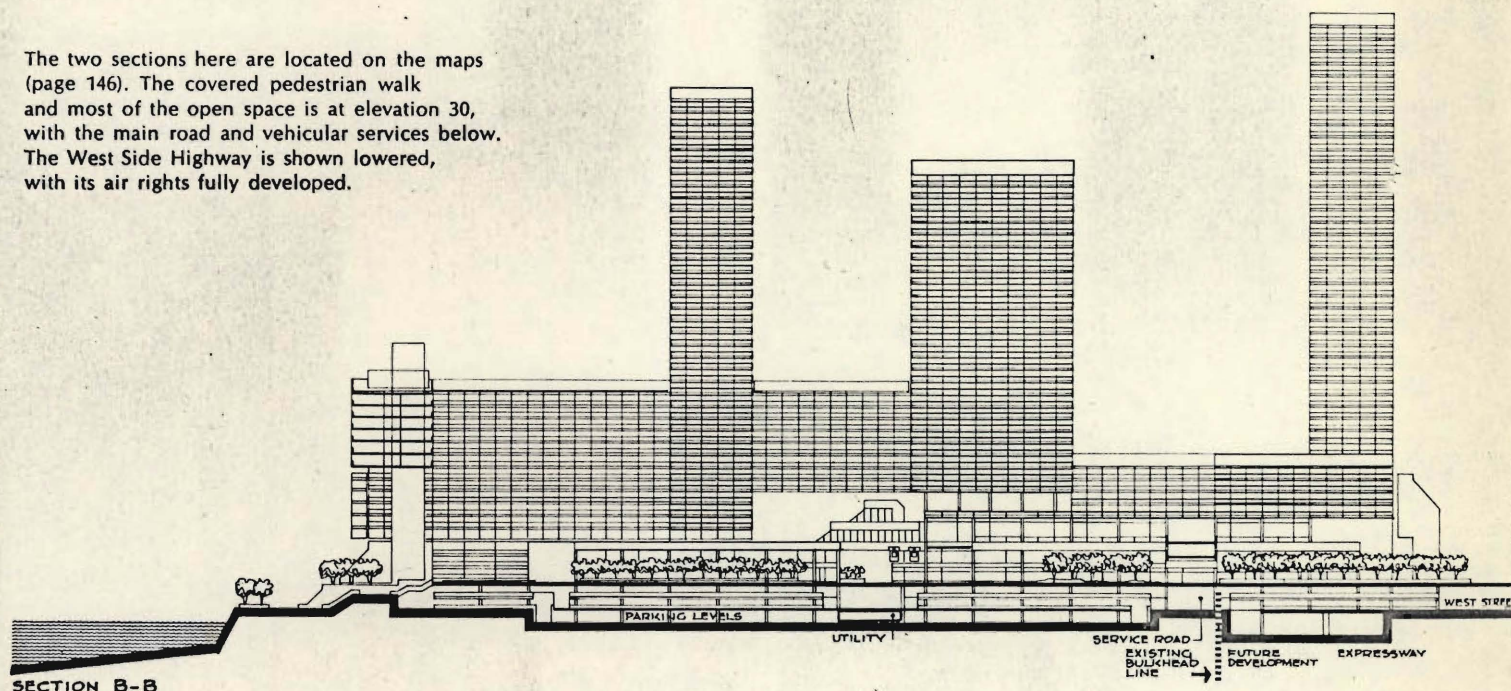
have been moved to recognize overcrowding and physical decay as part of our "urban crisis." They have generally produced larger or smaller amounts of discussion, but little actual change. It is fair to ask then: Is Battery Park City different? What is the general concept implied by the plans, renderings and sections, and does this scheme have a better chance than others of succeeding in the forms we see here?

The renderings, model, descriptive maps, and sections now complete have two purposes, of course. One is to describe in a general way the configurations of the buildings and the city which could be built on the site, under restraints imposed by laws, codes and the designers themselves. "Designers" is here used in its widest sense.



SECTION A-A

The two sections here are located on the maps (page 146). The covered pedestrian walk and most of the open space is at elevation 30, with the main road and vehicular services below. The West Side Highway is shown lowered, with its air rights fully developed.



SECTION B-B

cepts of Battery Park City as have the architects and planners. The drawings are not meant, then, to be detailed or immutable. The second purpose of at least part of the graphics is to interest and excite the viewer—to broaden one's concepts of the possible, for our cities cannot be changed without ideas that have this ability.

The scheme at this stage:

a public shoreline and circulation spine

The land has been divided into two principal parts. The southernmost portion (ten acres) is reserved for the 5,000,000 square feet of office space, represented in the renderings by the three octagonal towers, connected at their base with a series of terraces and a plaza, and at their higher elevations by bridges. The remainder of the

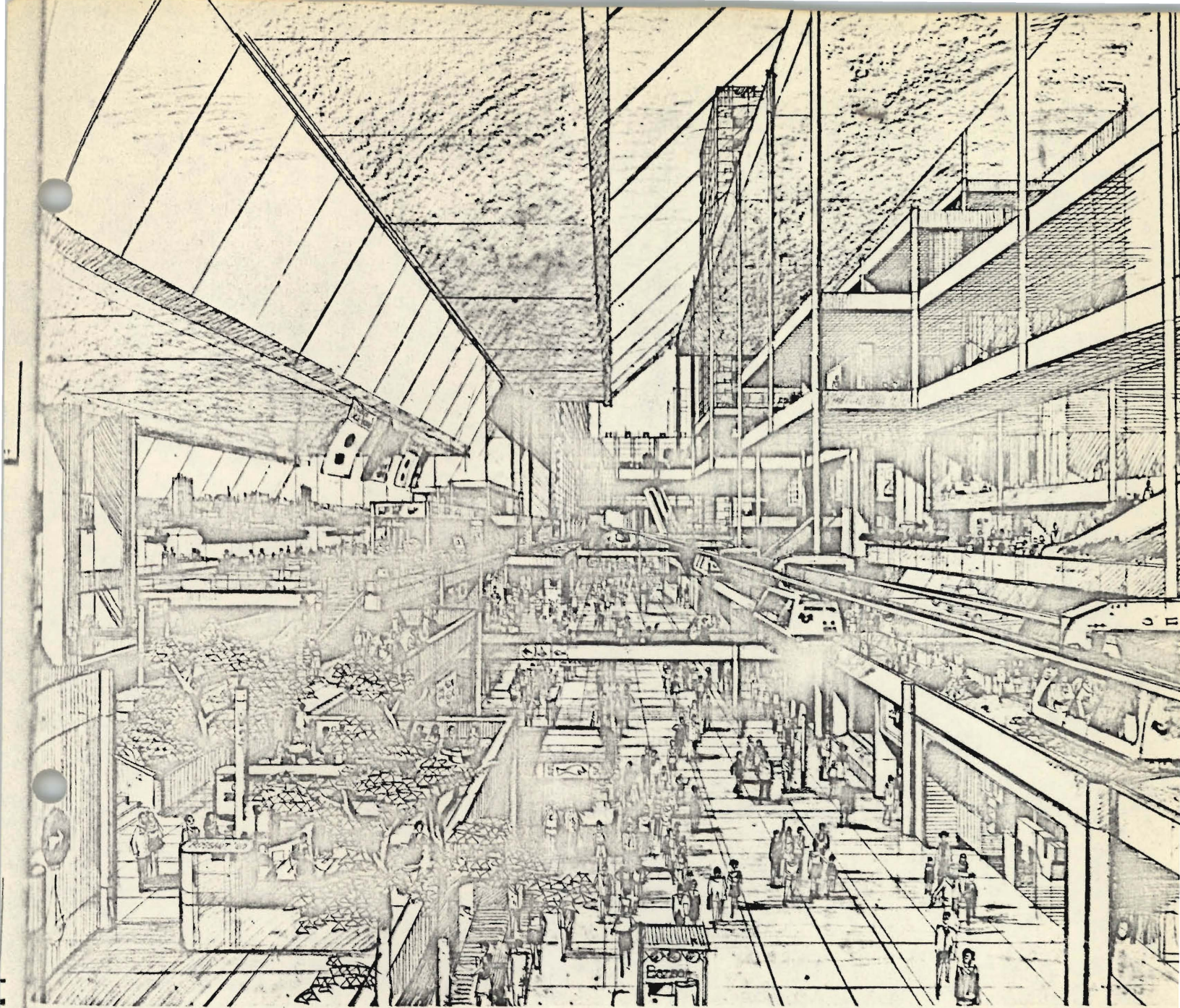
including shops, plazas, greens, coves, and an esplanade along the river's edge.

The core of Battery Park City will be a shopping and circulation "spine" (maps, page 146) running from the site of the office towers at the southern tip of the new land, past the World Trade Center, to the northern limits of the site. On the vehicular circulation map this spine is shown at elevation 7 (seven feet above water level) as a wide roadway, with secondary circulation loops connected to it—one for each neighborhood—and with access to parking garages both above and below the roadway.

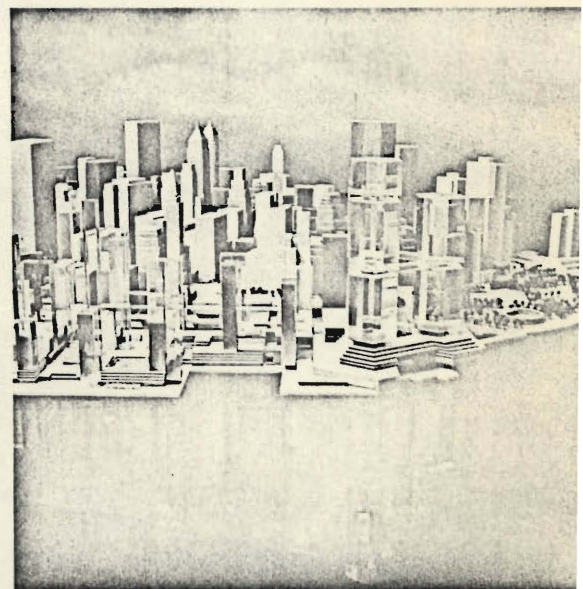
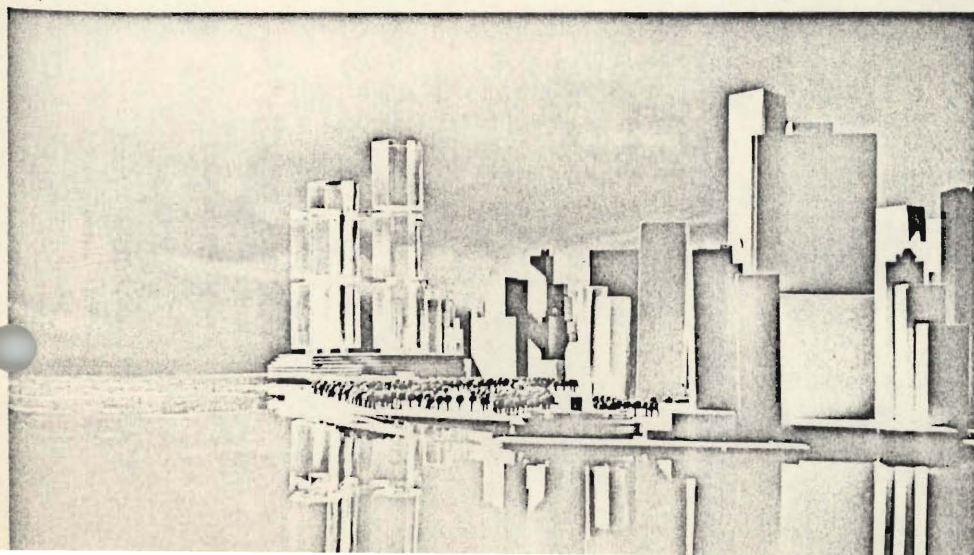
Pedestrian circulation also takes place principally along this central spine, but at elevation 30, above the roadway. The main pedestrian and shopping street is to begin as an enclosed plaza within the office towers

up to the new plaza in front of the World Trade Center. It would then become an open shopping mall to the northern end of the project. Running in close proximity to the mall would be the public transportation facilities. In the rendering (above, right) these are envisioned as an overhead suspended monorail system, with cars holding twelve people. The circles placed at the intersection of the grid lines (1 to 14 and A to D on maps) indicate the location of the elevators serving the apartment towers above elevation 30. This vertical transportation is connected by walkways to the main circulation corridors and finally to the city as a whole by seven major bridges across the West Side Highway.

A second feature of the project is its



This interior perspective of the covered pedestrian mall shows mixed shopping and restaurant spaces, and one concept for the rapid transit system. Below are two model photographs, showing the apartment towers located within the grid system, and the large office towers.



use. It would be irregularly shaped, as shown on the maps, with at least two major coves and with its entire length devoted to a public esplanade which would be closed to vehicular traffic at all times, with the exception of emergency vehicles.

As a conception of what is possible in city life, Battery Park City's vision is outstanding. Its physical forms are sufficiently diverse to be interesting, and facilities of differing functions are in proximity to each other. This mix of forms and functions is not as strong (nor as chaotic) as the fabric of our existing cities, but it is certainly in better relation to existing patterns than most core-city "projects" we have seen for too many years. More dramatic vistas from the interior of Manhattan could have been created in Battery Park City by allowing the existing east-west streets to run through to the water's edge, as has indeed been done in the Lower Manhattan Plan of 1966. And the proposed fixing of vertical transportation and apartments within a grid system (which makes it easy for the pedestrian or driver to find his way) could make the spaces between buildings repetitive and dull. But the plan acknowledges the need for a rational circulation system first of all, and its buildings and spaces are subjected to this discipline. It indicates a workable yet nearly total separation of vehicular and pedestrian traffic. The principal space of the circulation spine—its enclosed mall—is given entirely to the pedestrian, as is the waterfront and most of the spaces open to the sky. Properly conceived, this disciplined scheme can be as visually exciting as the graphics which now represent it.

Will it be built

in conformance to the present scheme?

The financing procedures are these: the Battery Park City Authority must first obtain a Master Lease from New York City for the 91 acres of new land—this lease to extend for 100 years. Battery Park City will then issue bonds to finance the remaining fill required and the preparation of the site. It can then sublease the land designated for office buildings and for apartments to private developers, applying the revenue from these to develop the streets, utilities, and public amenities. The developers of the office buildings and conventionally financed apartments will pay full rent and a yearly tax equivalency payment to Battery Park City, which will in turn pay the city the annual revenues agreed upon in the Master Lease. Developers of the low- and middle-income housing will pay less annual rent to the city than will the high-income apartments, and low-income construction costs will be partially subsidized.

If not rigidly controlled, a nonprofit "public interest" corporation created to finance a specific enterprise can become heavy-handed; dedicated to its own self-perpetuation and responsible to no element of the electorate. In this instance, the

New York's Board of Estimate must approve, as described above, before development can proceed. Included as a part of this lease is the Master Development Plan for Battery Park City. This includes: 1) the graphic material of maps, plans, and charts which detail the proposed scheme (including 12 site maps that explain existing conditions, establish traffic patterns, propose the sanitary system, etc.; 2) the written explanations and descriptions that accompany the graphics; 3) a summary of the proposed density controls for the site; 4) a written section of planning and design criteria, which outline in a general way the design intent of the documents within the Master Plan; and 5) a section that provides general guidelines for the preparation of plans for specific development, including their design review by a still-to-be-determined system.

The design criteria stipulate, in part, that the project shall be developed in layers, with divisions of land use being defined both vertically and horizontally. It protects five views, specifying that buildings may not be constructed so as to obstruct them, and establishes the design objective of a "pyramidal" skyline, with the highest towers being placed near the World Trade Center.

The written documents which accompany the drawings stipulate that there will be two coves as shown and that an uninterrupted public esplanade will exist for the entire length of the waterfront. It specifies that 30 per cent of the total site shall be developed for public use, (plazas, parks, the esplanade, etc.) and that an additional 27.5 acres within the residential developments be reserved as open public space. It specifies that the major pedestrian circulation street shall occur at elevation 30 and the vehicular circulation shall be at elevation 10. An enclosed mall is a stipulated part of the documents. The "grid system" as a basis for locating the apartment towers and the vertical transportation is specified in the Lease as only one approach which might be taken.

The concepts we see implied in a general way by the drawings and plans, then—public access to the shore, the coves, large plazas and public spaces, separation of vehicular and pedestrian traffic, an enclosed mall, the multi-level, mixed-usage, layered development of the site—are in fact specified in the Lease and must be included in any development of the site based on that lease. This, plus the detailed and workable financing plans, give Battery Park City a chance of succeeding in a form similar to what we see on these pages.

Of course, a development of this nature, spanning ten years, must be flexible too, and depend to a large degree on the competence and good faith of the men who direct it from day to day. A format for design review has yet to be established, and it is important. As specific projects are proposed for Battery Park City by the pri-

their functional and esthetic conformance to it, and rejected if they do not comply. In principle, the Office of Lower Manhattan Development and Battery Park City Authority have agreed that the city (rather than the Authority or some architectural "board of arbitration") should exercise the final design judgment on a particular design's suitability and appropriateness to the Master Plan, and that the form of the office towers as shown in the Master Plan (three linked hexagonal towers of 50 to 60 stories each, the central plaza between, the parking, etc.) should be followed strictly, if at all possible.

Other controversial issues may effect the sociological and financial scope of the proposal, though not necessarily its design. One is the proposed mix of high-, middle-, and low-income housing. Only 7.5 per cent of the dwelling units are now proposed as low-income housing, and many people consider that insufficient. The reasons for this low percentage are, of course, financial. The financial load of the project is being carried by the office buildings and, to a lesser degree, the conventionally-financed apartments. The middle- and low-income units would be subsidized by either the state or Federal government initially, and eventually by the city too, for they would pay much less tax. Some planners have said that the only way more low-income housing could be built within the project is to increase the amount of office space, either in height or the area of land covered. Others say not even this is possible without creating havoc in the finely tuned financing, and possibly scuttling the whole project.

Another issue: apartment construction in New York City is at its lowest ebb in years; why will developers be prone to build apartments in Battery Park City when they will not build them anywhere else in Manhattan? There are at least two advantages: A prospective developer will not have to assemble several parcels of land to create one sufficiently large tract, as is usual in the city, and there will be no problem of disrupting or relocating existing tenants. These advantages eliminate two logistical headaches for developers, but do not substantially effect the long-term financial risk. The city may have to offer certain special concessions or guarantees to developers and their bankers if they are to be enticed into fulfilling the role which the present plans of Battery Park City assume they will fulfill.

Yet all of these problems are surmountable. Indeed, the existence at this stage of specific and identifiable problems, as well as the substantial amount of drawing and planning already complete, help make Battery Park City believable, and a project that could change the face of Manhattan.

—Robert Jensen

BATTERY PARK CITY, New York City. Controlling agencies: Office of Lower Manhattan Development, Richard H. Buford, director; Arthur Wrubel, planner. Battery Park City Authority, Charles Urstadt, chairman; Edward P. [unclear], [unclear].

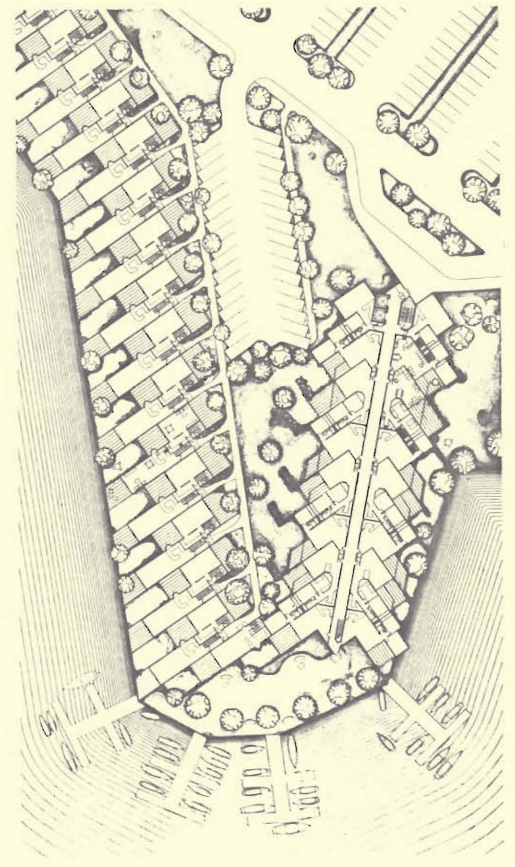
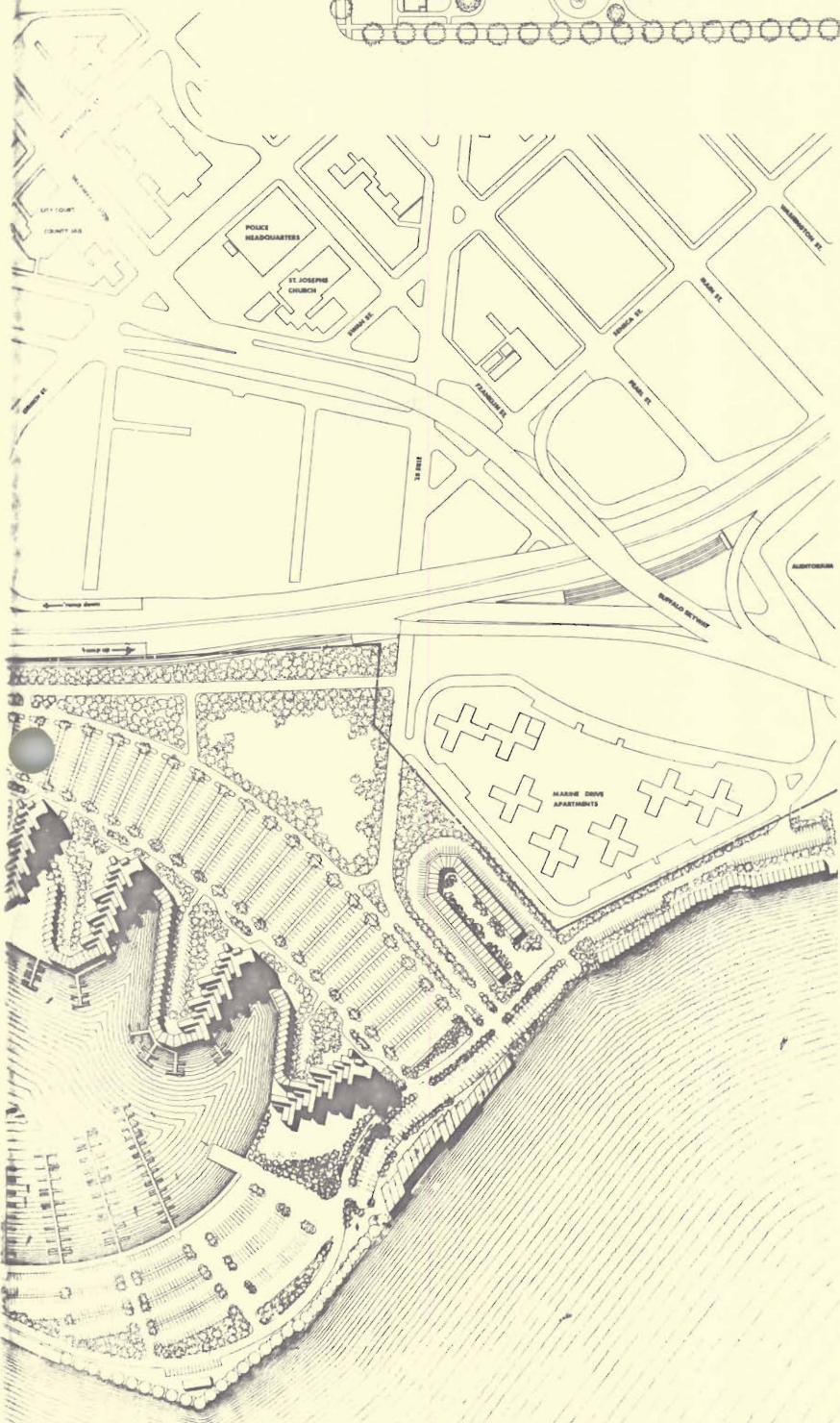
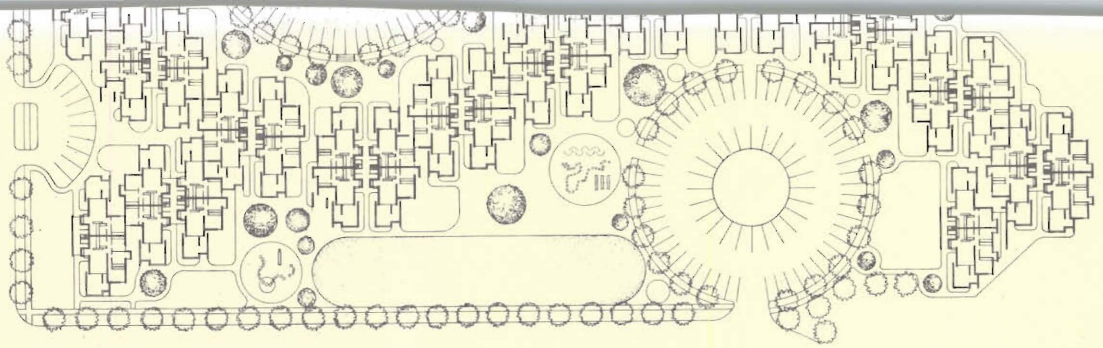
Rudolph wished to design a building which would in his words "open its arms to the citizens of Niagara Falls." He has located it within the superblock in such a way that it is easily accessible to the public by automobile or by foot. The main entrance fronts upon a broad plaza and has splayed walls to invite the public in. The dominant characteristics of the building are the sloping walls, which were derived from the necessity of providing the largest area on the ground floor, a smaller area on the second floor and a still smaller area on the third floor. By means of these sloping walls and a pitched roof Rudolph has attempted to achieve a building almost domestic in quality. The splayed walls are extended beyond the infilling walls, most of which will be glass, in order to reduce the glare and give a sense of enclosure to the interior. These splayed walls will permit each floor to be extended, should this become necessary in the future. This flexibility with regard to the size of the building is characteristic of Rudolph's work.

Corporate Headquarters
Rudolph conceives this building—the Corporate Headquarters and Research

Rudolph was among the first architects to be commissioned by the newly formed New York State Urban Development Corporation—a public authority launched by Governor Rockefeller, funded by bond issues, headed by Edward Logue and charged with the responsibility of erecting massive new housing developments in the state. Rudolph's

scheme for UDC has been described by Arthur Drexler as achieving variety "not by the arrangement of mass produced units, but rather by the deployment of large building forms in a total configuration related to the natural landscape. The result is not 'organic' in the sense of imitating natural forms, yet the buildings become a mountain range."



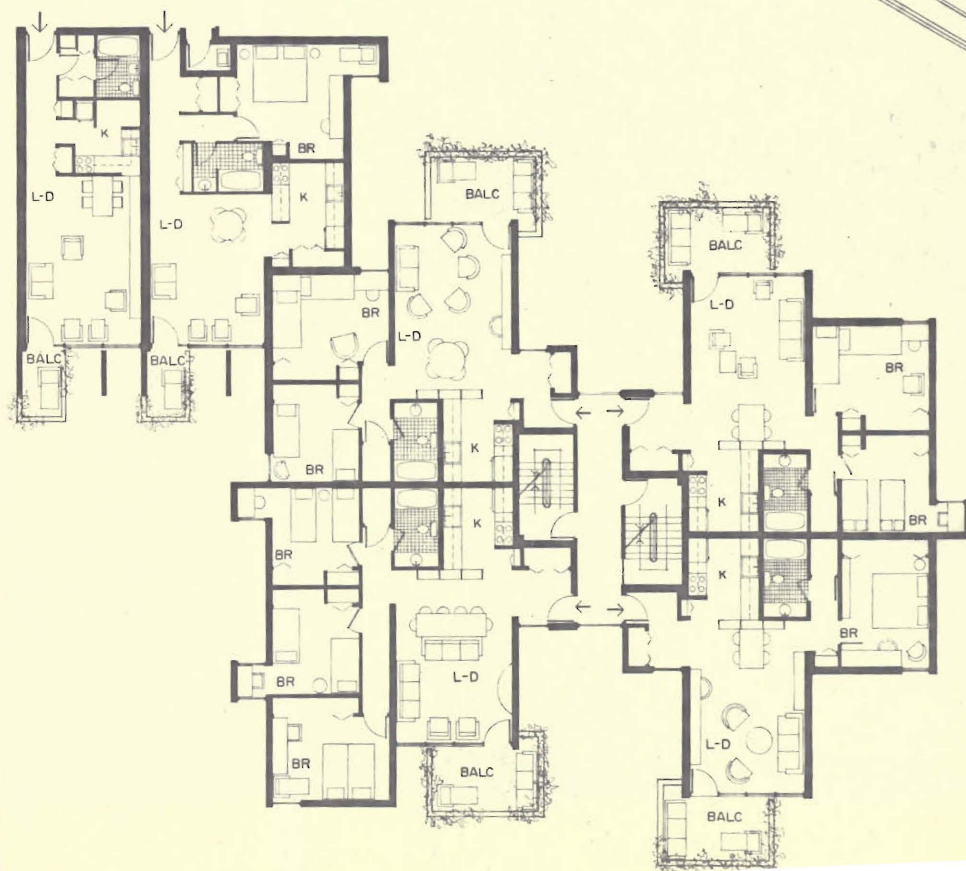
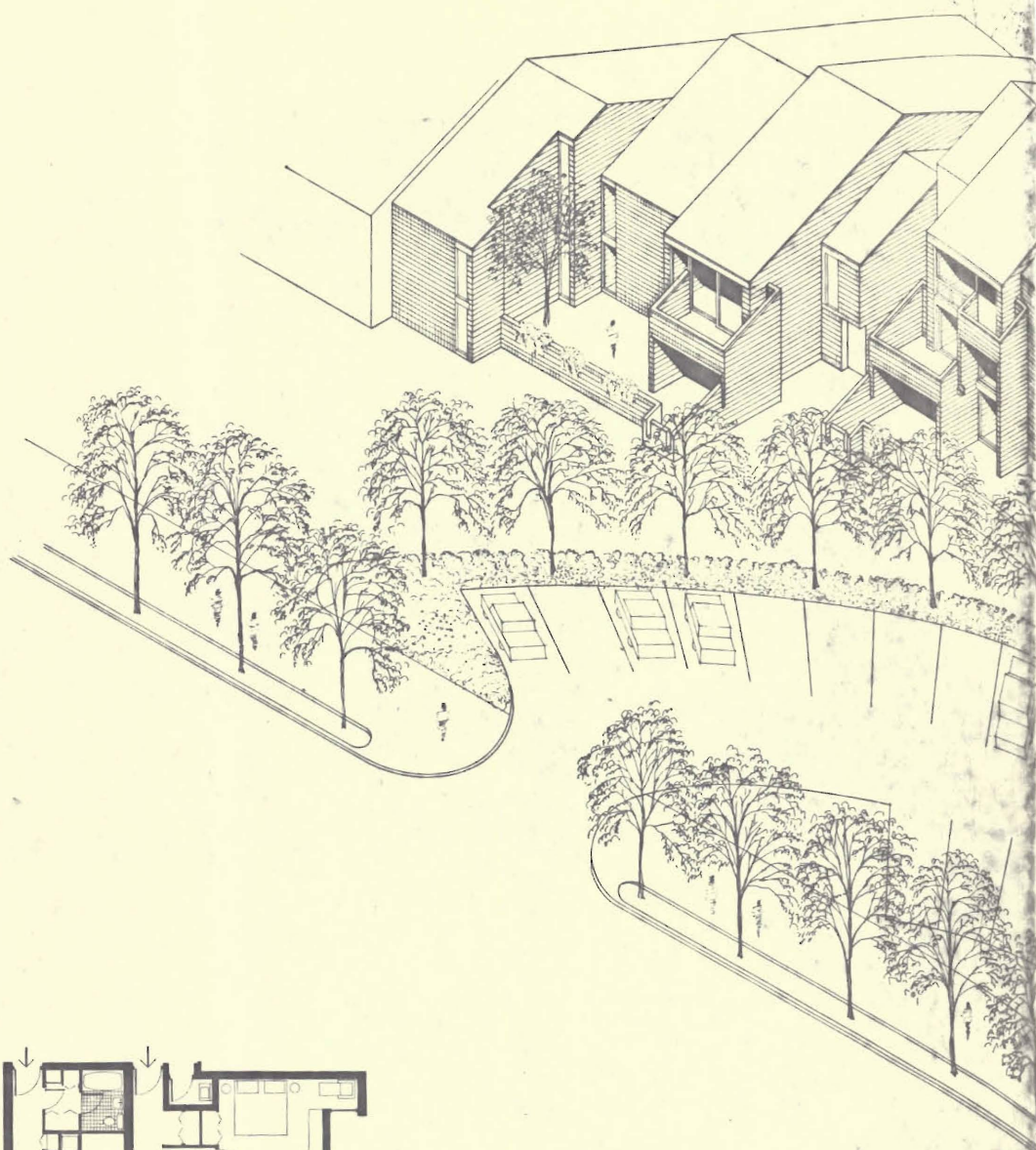


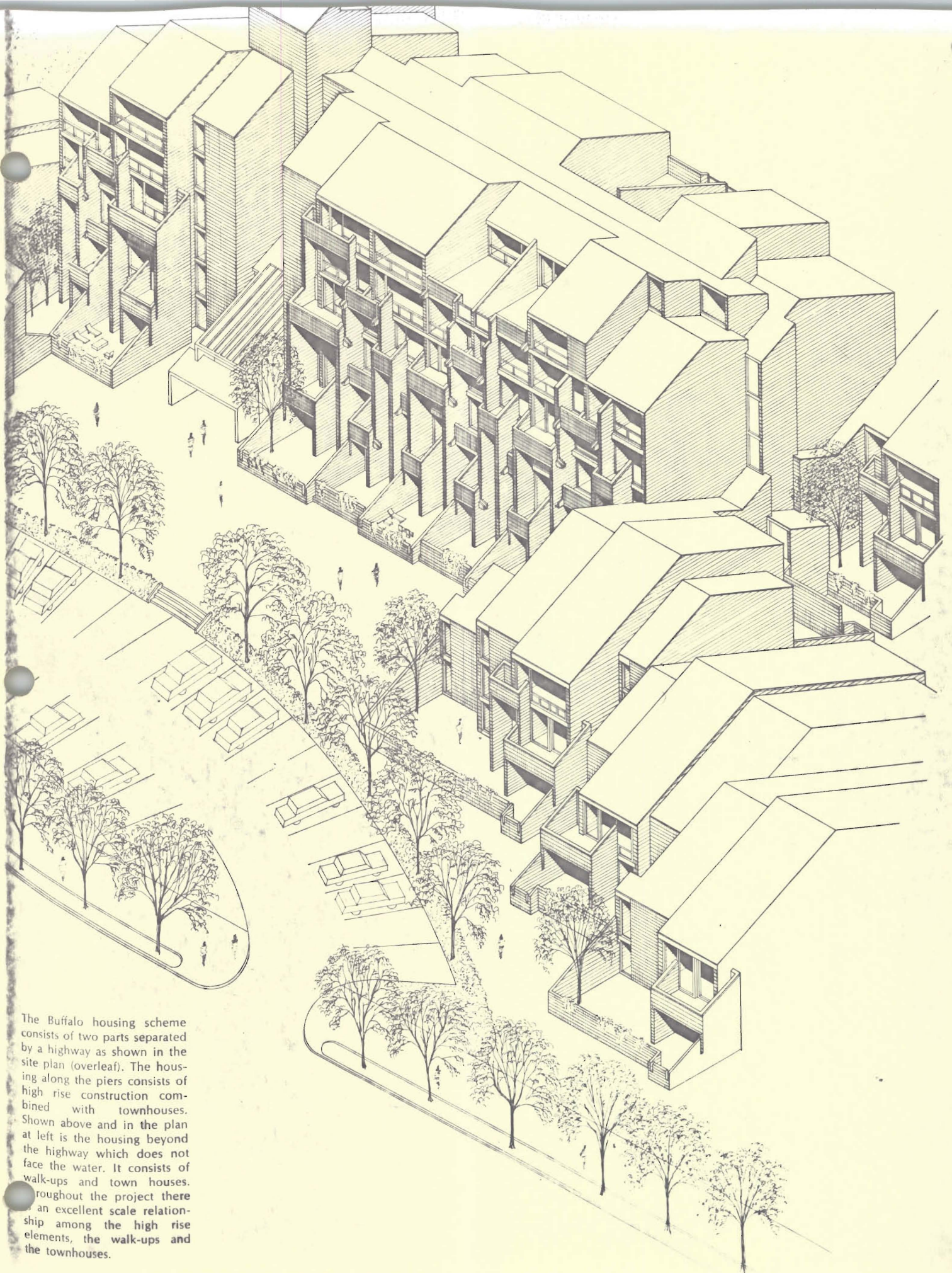
ridge upon which it is being built. Thus, the building steps back, providing man-made terraces at the apex of the ridge. Its placement allows people to enter it from below, walking up multi-leveled terraces, up more stairs and into the lobby.

According to Rudolph: "From a spatial viewpoint, the interior is given a new dimension with its sloping walls, giving an impression not unlike a growing tree—angles, light, shadow, flexibility. The building will impart a sense of being a living organism, rather than a box-like form. The laboratories will have an individuality and uniqueness quite unlike other laboratories because they will have higher ceilings lit by skylights at each end.

"The functions of the building are celebrated architecturally. There is contrast between those things that cannot be changed (mechanical shafts, columns, etc.) and the parts that can be changed—for example, the laboratories and other work areas which must be essentially flexible. Permanent interior structural components are being finished the same as the building's exterior—in rough textured sprayed aggregate within a plastic binder. The flexible components are being finished in a variety of surfaces—paneling, painted drywall etc. In a sense the building can be read according to the materials."

This building may be considered a summation of the characteristics by which Rudolph's architecture may be identified. The site has been a key consideration and the building is essentially topographical, single stories are clearly articulated to define scale, specific elements are elaborated within a clear and regular structural system, the plan is infinitely expandable in each of its three major blocks, and great attention has been paid to the flow of interior space as well as to the handling of reflected light. The building, although it doesn't actually consist of totally prefabricated space modules inserted within





The Buffalo housing scheme consists of two parts separated by a highway as shown in the site plan (overleaf). The housing along the piers consists of high rise construction combined with townhouses. Shown above and in the plan at left is the housing beyond the highway which does not face the water. It consists of walk-ups and town houses. Throughout the project there is an excellent scale relationship among the high rise elements, the walk-ups and the townhouses.

a structural frame, almost looks as though it does, and thus it prefigures and helps lay the groundwork for future technological development.

Buffalo Waterfront Development

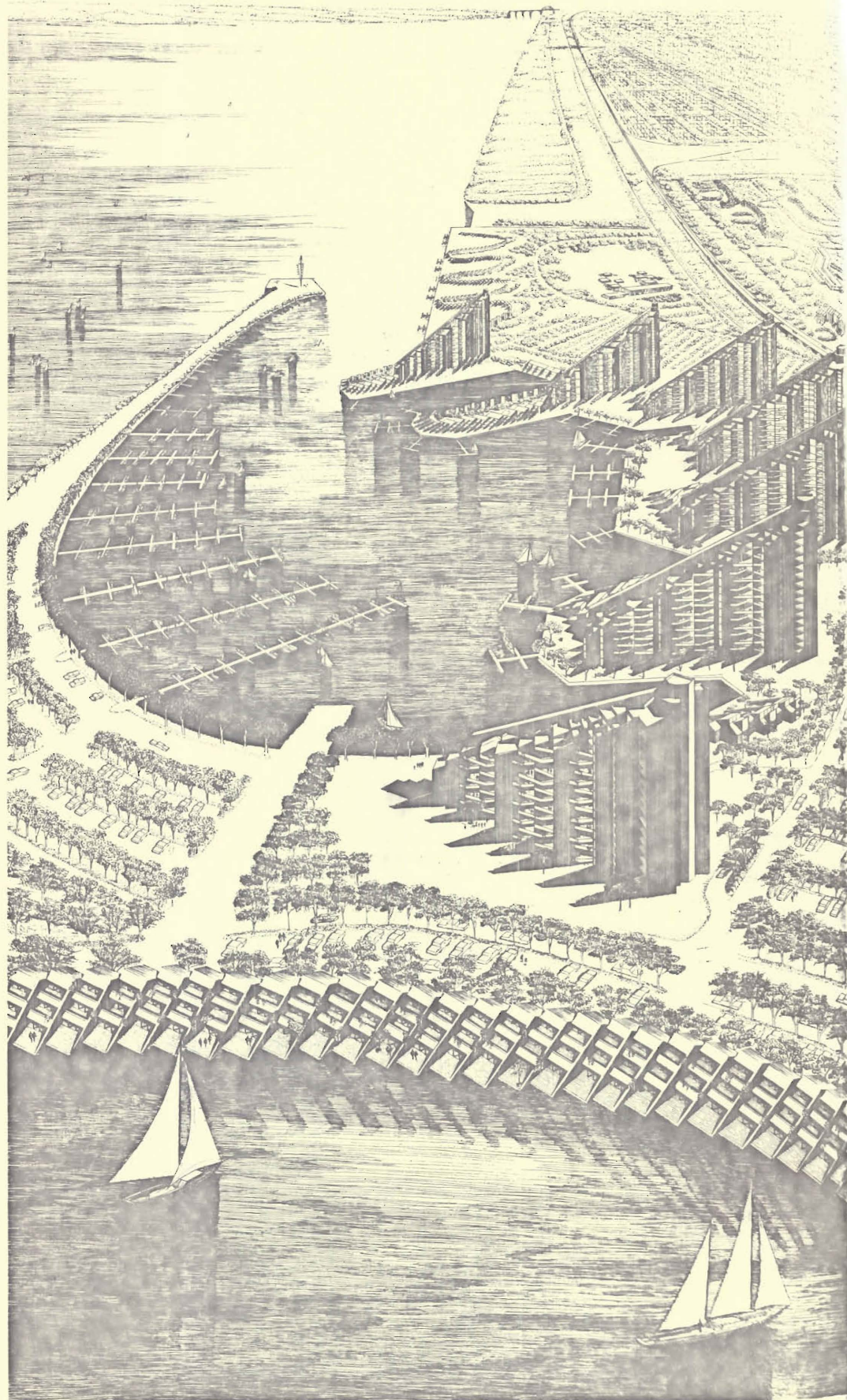
Designed in 1969 for the New York State Urban Development Corporation it began as a topographical solution—essentially according to Rudolph: "an undulating wall forming a bowl of space defined by the conjunction of land, water and cliffs." The buildings follow the configuration of the existing piers which will remain and be transformed into a marina.

A note about Rudolph's drawings

For those who wonder how an architect who is a great draftsman, but heads a busy practice can find time to draw like a master, the answer is that he draws, like many old masters painted, with the help of skilled assistants trained to fill in the details. For the Museum of Modern Art Show Rudolph himself set up all the perspectives, isometrics and other drawings, determined their limits and placement and established a scale of tonal values for each. He was assisted by Ralph Brescia, Paul Garrett, Robert Hill, Donald Luckenbill, Mart Mannik and Yugi Noga.

CENTRAL LIBRARY, Niagara Falls, N.Y.

Owner: The City of Niagara Falls, N.Y. Architect: Paul Rudolph; structural engineer: Lev Zetlin & Associates; mechanical and electrical engineers: Sherry Associates; library consultants: Charles M. Mohrhardt and Ralph A. Ulveling. CORPORATE HEADQUARTERS, RESEARCH LABORATORIES AND OTHER RELATED FACILITIES—BURROUGHS WELLCOME & CO., INC., Research Triangle Park, North Carolina. Owner: Burroughs Wellcome & Co., Inc. Architect: Paul Rudolph; structural, mechanical, electrical & site engineers: Lockwood Greene Engineers, Inc.; general contractor: Daniel Construction Co., Inc. BUFFALO WATERFRONT DEVELOPMENT, Buffalo, N.Y. Owner: N.Y. State Urban Development Corp. Architect: Paul Rudolph; structural engineers: Souza and True; consulting engineers: Simpson, Gumpertz and Heger; mechanical and electrical engineers: Sherry Associates; marina design: Webber, Di Donato, Renaldo; general contractor: Siegfried Construction Co., Inc.



D-1

LANDUSE - THE TAMPA BAY REGION

In general the many existing uses of land in the Tampa Bay Region are the combined result of private and public development interests which have been guided by local land development programs and controls of the many sub-regional jurisdictions. Today, the existing regional land use pattern accommodates the socio-economic activities of about 1.3 million residents with 312 thousand employed and approximately 3.4 million annual tourists. Until recently, local development programs and controls were usually based upon local objectives and plans to deal with local land development issues. Recently, though, local governments have found that as urbanization continues to expand without regard to jurisdictional boundaries, it has become a regional pattern of interacting land uses with many complex multi-jurisdictional development issues that should be dealt with on a regional basis to maintain the continuing potential of local development opportunities.

Current projections indicate that by 1985 the future pattern of land uses in the region will be expected to support the activities of about 3.1 million residents of which 670 thousand will be employed, and approximately 8.1 million annual tourists. To plan a regional development pattern that will accommodate this expected growth, the Tampa Bay Regional Planning Council has published a landuse study which provides an inventory of existing landuse and a conceptual plan for the continued development of the region.

HISTORICAL

Historically, settlements were first established along the bay shoreline for two reasons; water was the only means of transportation and it

also provides an ample food source. With the establishment of agriculture the coastal areas also provided a temperate climate for frost protection. The extension of the railroad into Tampa in 1884 stimulated commerce and promoted tourism by connecting the region to northern states. At the turn of the century phosphate was discovered in nearby Polk County and later in Hillsborough County opening up the vast hinterlands for strip mining that continues to the present.

During the Florida land boom of the 1920's large areas within the regions cities were platted but never developed until the decade following World War II. Networks of roads joined the many communities together but little urban development occurred between the city centers. Industrial development was centered in the Tampa area while the smaller communities remained residential in character with adequate areas of sales and services in their own areas. Tourist accommodations were built on the barrier islands following their connection by bridges to the mainland.

The mild climate and vast coastline areas continued to attract permanent residents and in the past two decades urban development has occurred in the once vacant areas between cities. Thousands of acres agricultural land have been encroached upon by the need for home sites. And finally the bays themselves have been dredged and filled to provide waterfront property for all that desire it. Commercial and industrial land uses are becoming more intense as the demand for urban land increases and the principal agricultural activities; citrus, dairying, cattle and winter vegetables have moved into the interior areas of the region.

EXISTING LAND USE

Conclusions pertinent to this problem made by the Tampa Bay Regional Planning Council about the existing patterns of land use for the Tampa Bay region are as listed below.

1. Urban centers in the region have not coalesced; however trends of urban dispersion indicate adjacent urban areas along the shoreline and principal highways of the region have begun to merge and form urban corridors.
2. Urban corridors have begun to develop between Tampa and Plant City, across the northern shores of Old Tampa Bay between Tampa and Clearwater, south from Tarpon Springs throughout all of Pinellas County, and along the shorelines of Manatee and Sarasota Counties from Palmetto south to the city of Venice.
3. Although the pattern of urban land uses is very intensive along the shoreline of the Region, 87.7 per cent of the 2,629 square miles of land in the region is of non urban use.
4. Agriculture is the largest land use in the region and accounts for 19.2 per cent of the total land.
5. Residential land accounts for about 51.7 per cent of the total urban land use pattern or 6.4 per cent of the total land of the region.
6. Recreation land uses in the region for parks and open space account for 13.6 per cent of the urban land use pattern or 2.4 per cent of the total land in the region.
7. Land being used for recreation purposes in the region may seem to be a large percentage of the total land; however, unlike most other regions throughout the nation, the Tampa Bay Region must provide recreation oppor-

tunities not only for the residents of the region, but also for the many tourists who visit the region annually and compete with residents for use of available recreation facilities. Other factors such as the high number of resident retirees in the region, who demand year-round recreation opportunities and were attracted to the region due to the climatic and resource amenities which permit the same, also demand recreation facilities.

8. Residential land use patterns in the region is trending towards a higher density as mobile homes, condominiums and highrise apartments are being developed. This high density is being generated by the residential market and the high land costs of small choice development areas, which are near the shoreline.

9. The land use density for future regional commercial development was postulated for planning purposes to be between 12 and 14 employees per gross acre. Due to the scope of regional planning, this standard does not apply to small non-regional shopping services or centers which should be planned as integral elements of sub-regional residential developments.

PROPOSALS

The following proposals in the Regional Land Use Study are of interest to this problem.

1. Urban expansion; A major land use issue in the region is the public cost which results when large developments are permitted to locate in areas where public services have not been designed or programmed to accommodate them. When existing land use controls permit large developments to occur in such areas, they place considerable impact upon public improvement programs that must be revised possibly at the cost of other more

important public projects.

Consequently two recommendations were proposed to minimize the impact of this land issue upon local and regional planning to formulate a workable pattern of future regional land uses to accommodate the potential development opportunities. The first recommendation was that existing land use controls should be assessed and revised, as necessary, to permit local governments to guide new development into those areas where adequate public services exist or improvements are programmed. Second, the local tax systems in the region should be assessed and revised, as necessary, to assure that both vacant and developed urban land holders share the increasing cost of needed public improvements brought about by their economic activities.

2. Strip commercial developments and industrial uses located along major arterial routes and residential areas, without proper buffering, were found to be frequent in the Tampa Bay Region. Commercial strip development has been detrimental in many cases, causing decay in residential areas. Industrial Pockets, not being adequately buffered, have also caused structural decay in many residential areas. To alleviate future conflicts as such, urban buffers must be a planned element of similar land use developments.

3. Land versus water use: The interrelationships between land use and water use should involve a minimum of conflict in order for the region to function efficiently. The material structure of the Tampa Bay Region causes many interactions between water and land. This is, in fact, one of its prime advantages in the attraction of tourists and residents to the area. Swimming, boating and fishing are actively pursued even during the winter months, and water uses, as such, seldom conflict with land development opportunities or water potential uses.

As can be seen, land use development has in the past been erratic, but significant changes are occurring at this time and will continue into the future.

LANDUSE-LOCAL TO SEDDON ISLAND

Seddon Island lies in the northeastern portion of Hillsborough Bay. This area is one of the most diverse and dynamic within the State of Florida. Peculiar to this area are commercial, industrial, institutional and residential land uses. At the very center of these activities lies Seddon Island. The island, though is removed from these activities by three ships channels, Garrison Channel to the northwest, Sparkman Channel to the east, and Seddon Channel to the southwest.

The central business district of Tampa is located across Garrison Channel. This area includes besides very active commercial office and retail functions a large dock and warehouse area on Garrison Channel. This particular area will definitely undergo intensive development in the next 20 years. The Tampa Bay Regional Planning Council proposes that it be developed as commercial office and entertainment area.

Across Sparkman Channel, on the east, lies one of Tampa's most important industrial areas, Hooker's Point. The area currently serves as a port, warehouse, manufacturing, and shipyard area. Some low income housing groups exist in this area, but will move as industrial intensification occurs.

To the southwest of the island, across Seddon Channel lies Davis Islands. Davis Islands was built from filled land in 1927. Tampa General hospital, a nursing school, a medical office tower, a yacht club, yacht basin, a private airport, some small retail shops, and much of the cities

7

best single and multi-family housing is located here.

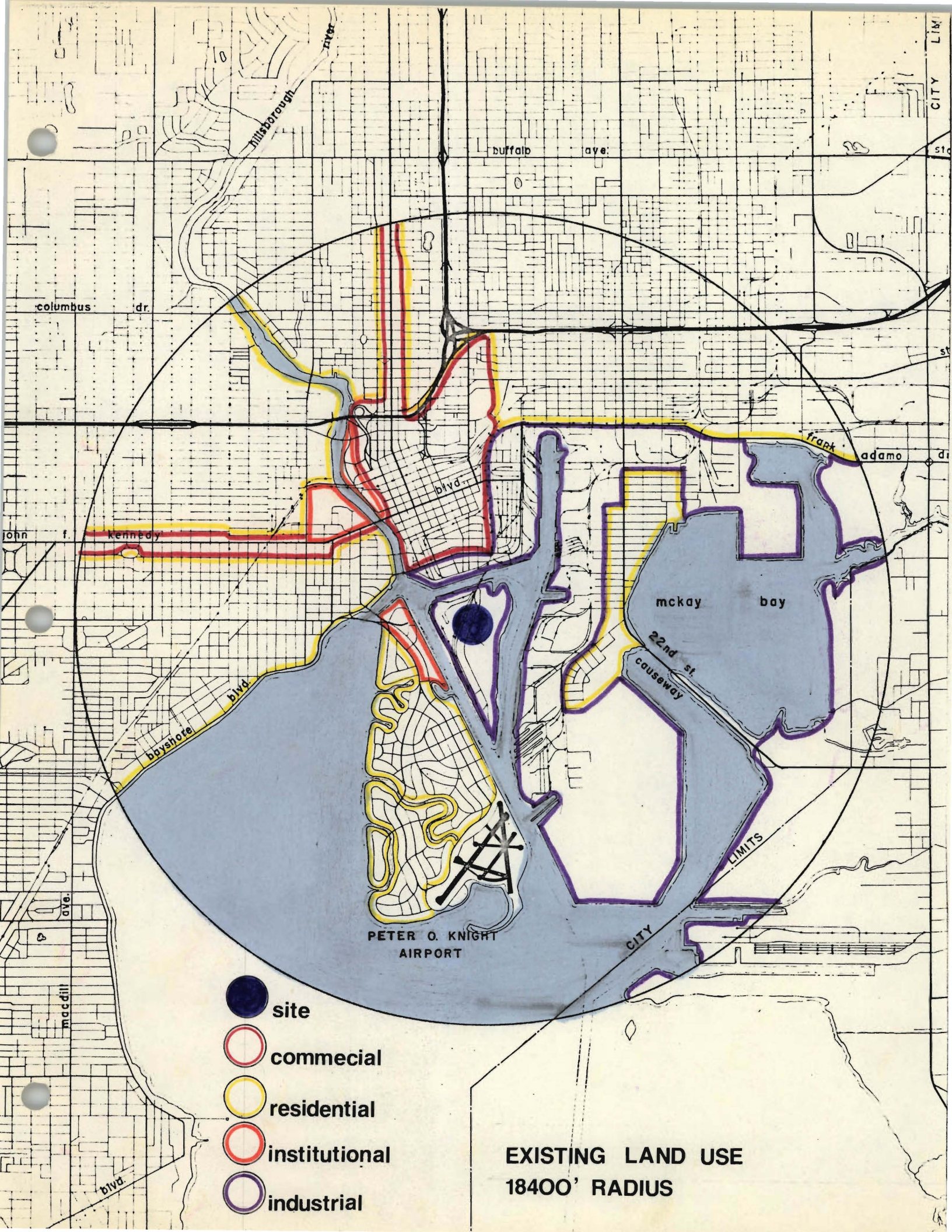
Seddon Island itself is flat, at sea level, generally devoid of vegetation with the exception of marsh grass.

From this analysis it can be seen that significant changes will occur in the land use in the Tampa Bay Region. More thought will be given to the location and positioning of commercial, industrial and residential areas. Urban land will be more intensely developed and will begin to attain a more cohesive look.

In the mixed use areas immediately local to Seddon Island there will be a redefinition of their characteristics. The central business district of Tampa will lose its wharfs and warehouses and undergo more commercial development. Hookers Point will be more intensely developed as both a port and industrial area.

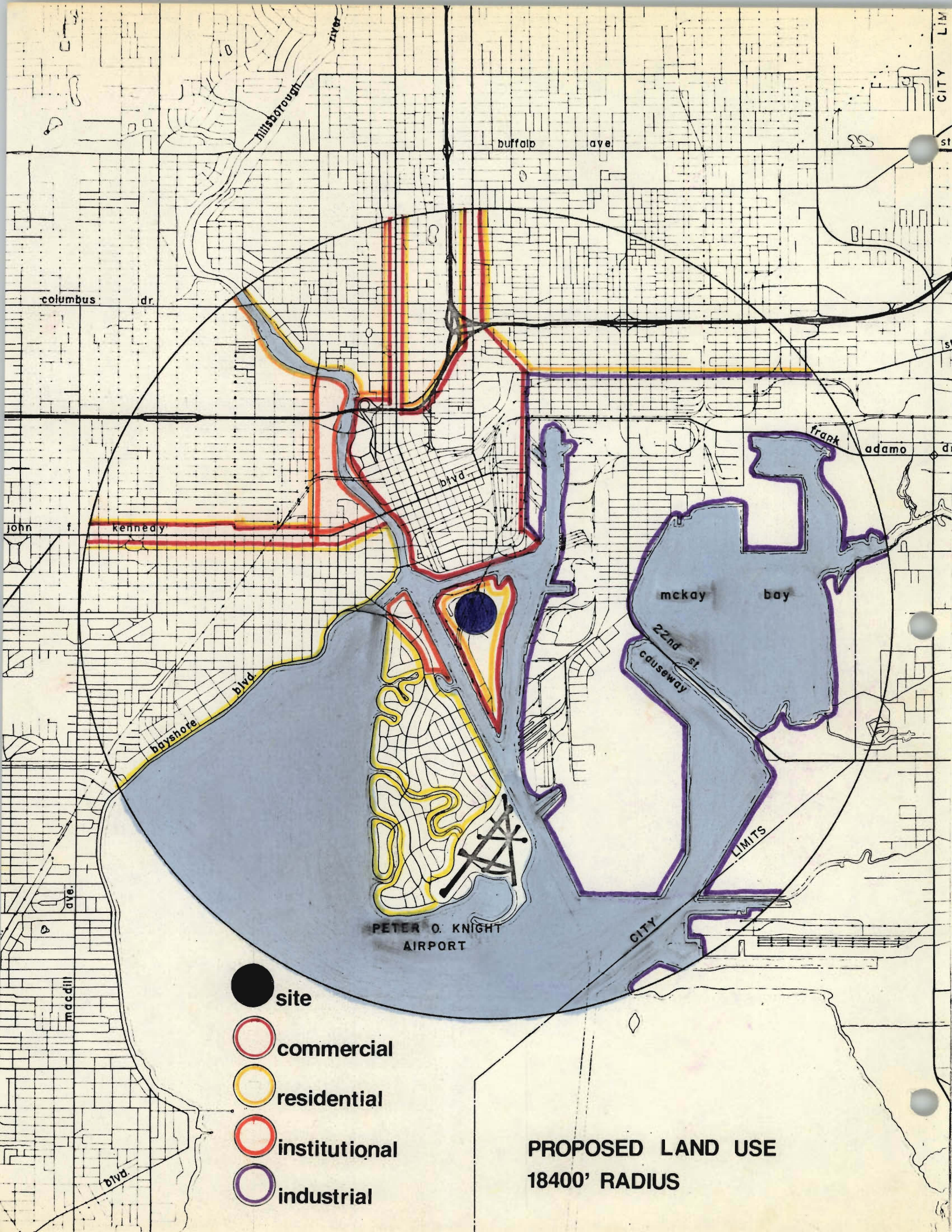
Davis Islands characteristics were established long ago. The islands are almost entirely developed now, any remaining development will continue in this manner.

Seddon Island located at the heart of this area should respect its position in terms of land use. As a pivotal point between the commercial district of downtown and the residential area of Davis Islands it should adopt the characteristics of both and create a very urbane atmosphere for long range commercial, residential, and recreational development.



- site
- commecial
- residential
- institutional
- industrial

EXISTING LAND USE
18400' RADIUS



D-2

Presently there are only two limited means of access to Seddon Island. The first is by a wooden trestle railroad bridge. This bridge is currently used by freight trains which carry local phosphate to the loading docks located there, and by the automobiles of the islands warehouse employees. The second means of access is by boat.

Before any development can take place on Seddon Island, new and better means of access must be constructed. Because of the strong relationships that will develop between Seddon Island and downtown Tampa, And between Seddon Island and Davis Islands, access connection should be made with both of these areas.

Two connection should be established with downtown. This is necessary to facilitate the commercial and retail activity that will occur between them. The two ideal connections would be with Florida and Nebraska Avenues. Both are major north-south routes in the downtown peninsula. The extension of Florida and Nebraska Avenues would, and with an accompanying cross water connection, be a relatively simple matter.

A lesser amount of traffic will cross between predominately residential Davis Island and Seddon Island, therefore only one connection should be necessary. Land area on the northwestern portion of Davis Islands is currently devoted to the Tampa General Hospital. It is doubtful that any connection is feasible here. Land on the southwestern part of Davis Islands is now residential. The location of a connection here is less than ideal for both Davis and Seddon Islands. The land area bordering Seddon Channel north of the Davis Islands Yacht Basin and near the center of Davis Islands shore is an excellent location for a connection. The

load is currently used as a parking lot for a defunct nursing school. Streets bordering it connect directly to East Davis Boulevard, one of Davis Islands two major streets.

Bridges and tunnels are the two means of creating crosswater connections between Seddon Island and the other two areas. In the case of bridges, the draw type would be necessary. Both Seddon and Garrison Channels are active ships channels, and will remain so even when wharf facilities are removed from Seddon Island and downtown. Tunnels, while more expensive and technically complex, would also be a means of eliminating this problem.

RELATIONSHIP TO OTHER TRANSPORTATION MODES

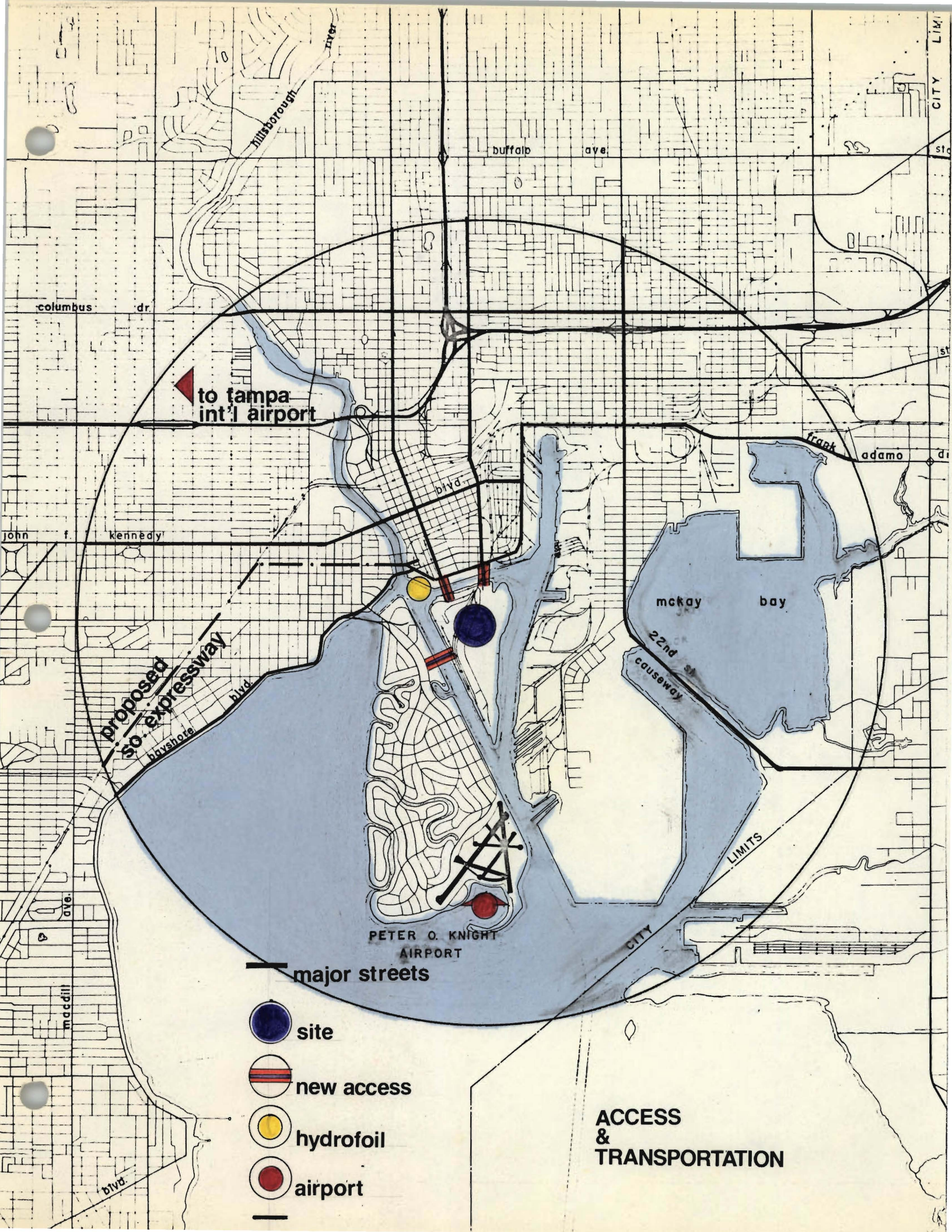
AIR

The new Tampa International Airport is presently nearing completion. This airport, located approximately six miles west of Seddon Island will be one of the most technically advanced air terminals in the country. Interstate 4 via the Florida and Nebraska Avenue connections will provide easy access to and from the airport and Seddon Island.

In addition to the International Airport there are several light plane airports in the area. Located on Davis Island is Peter O. Knight Airport. This airport and the General Aviation Terminal at Tampa International are the major terminal for small aircraft in Tampa.

WATER

In recent years there has been much talk about the establishment of hydrofoil service between Tampa and Saint Petersburg. The Tampa Bay Regional Planning Council has proposed that a hydrofoil service terminal be located at the present wharfs on Garrison Channel to the northwest of Seddon Island.



to tampa
int'l airport

proposed
so. expressway

PETER O. KNIGHT
AIRPORT

mckay bay

22nd
causeway

LIMITS

major streets



site



new access



hydrofoil



airport

ACCESS
&
TRANSPORTATION

D-3

Seddon Island, while almost totally undeveloped, with the exception of several warehouses, has full capacity water, electrical, and sewage lines. Water is provided by the Tampa Water Department. Sewage recovery is also by the water department, and is treated at the cities central treatment plant on Hooker's Point. Electricity is provided by the Tampa Electric Company.

Gas and storm drainage lines are not presently on the island, but should of course be included in any development plans. Gas lines would be installed by the Peoples Natural Gas Company. Storm drainage is under the authority of the Water Department.

D-8

GEOGRAPHIC

Seddon Island is a flat, triangular shaped island located in Hillsborough Bay. It is surrounded on three sides by deep water ship channels. To the northwest lies Garrison Channel, and the central business district of Tampa. To the east is Sparkman Channel and Hookers Point, one of Tampa's major port and industrial areas. Located to the southwest is Seddon Channel and Davis Island, a established residential area.

MEASUREMENTS

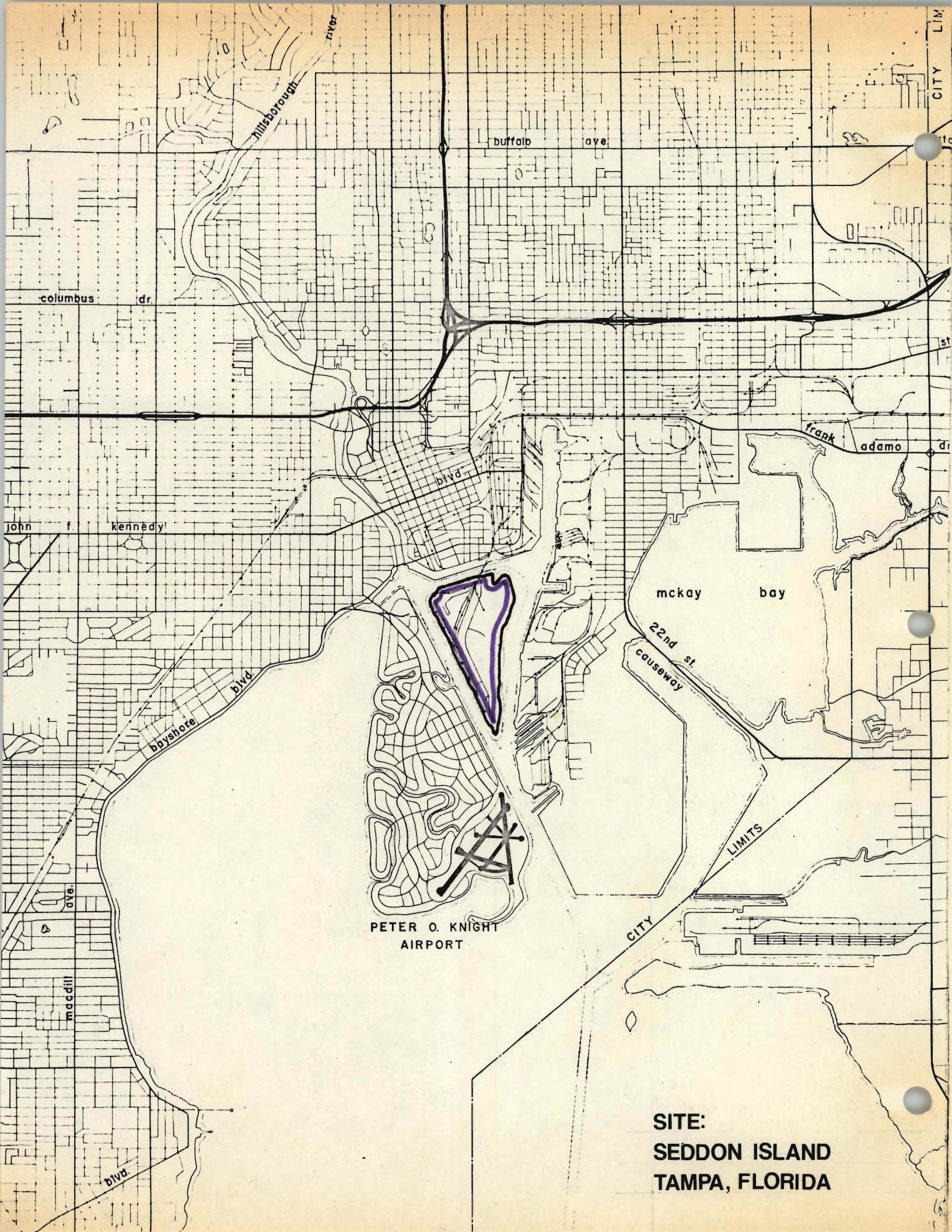
Seddon Island measures 2800' on its northwest or Garrison Channel side. On the Sparkman Channel or east side it measures 5800'. To the southwest or Seddon Channel side, the island measures 5400'. There are approximately 7,560,00 sq. ft. or 175 acres. Like most of Tampa Seddon Island is only a few feet above sea level. There are no beaches and at present no seawalls.

VEGETATION

Vegetation on Seddon Island is sparse. The island is covered by a marsh type of grass. There are, though, several stands of trees, one located at the southeastern end and one at the northwest edge. The soil is of a compacted sand variety, typical to bayfront areas in Tampa.

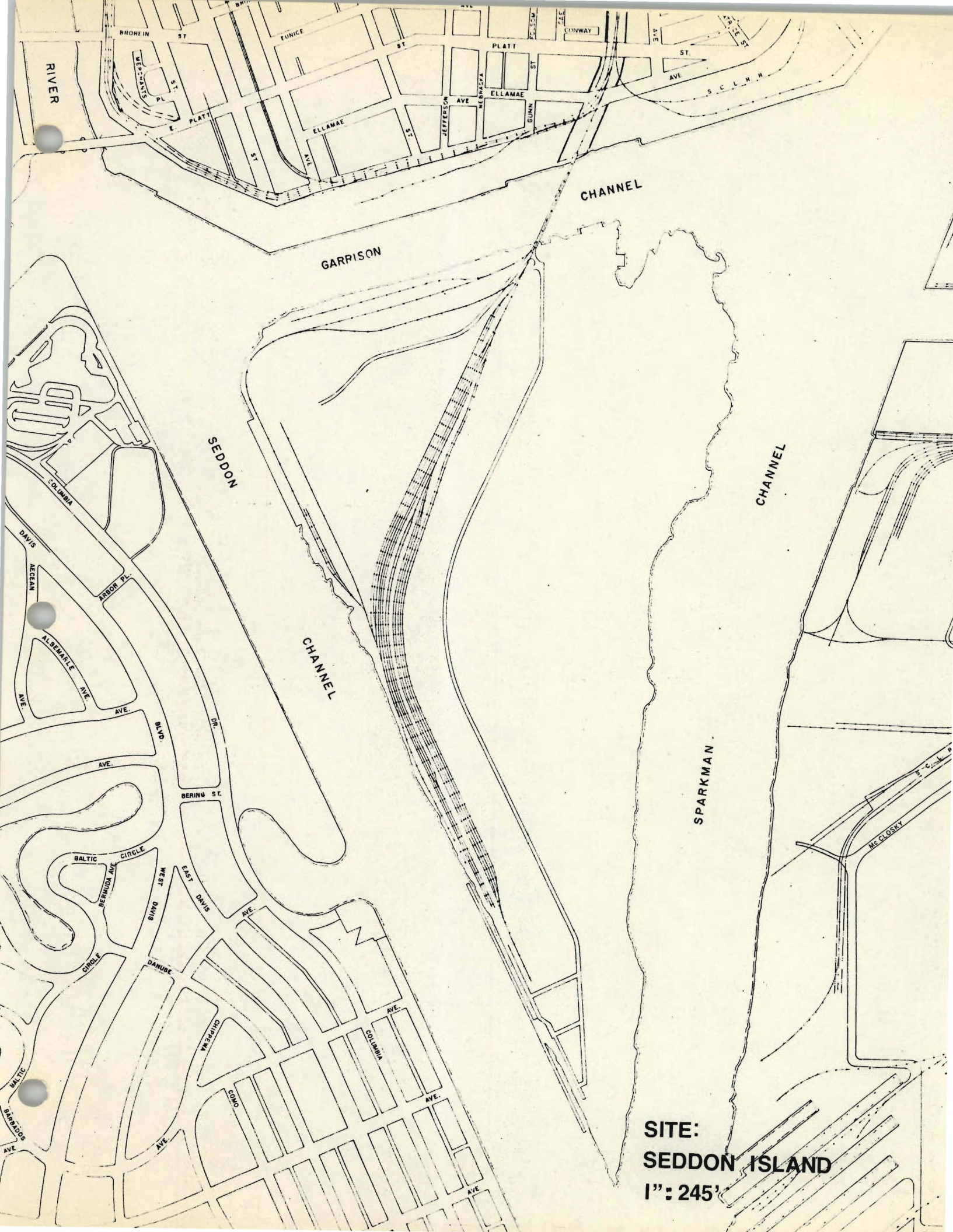
EXISTING STRUCTURES

Presently on the island are some small maintenance and office buildings located near the railroad bridge. On Seddon Channel are several phosphate and scrap iron warehouses and their accompanying wharfs. No existing building is of any great value. The Seaboard Coastline Railroad, owner of the warehouses and wharfs, intends to close the Seddon facility upon completion of its new port and rail facilities at Port Sutton on Hillsborough

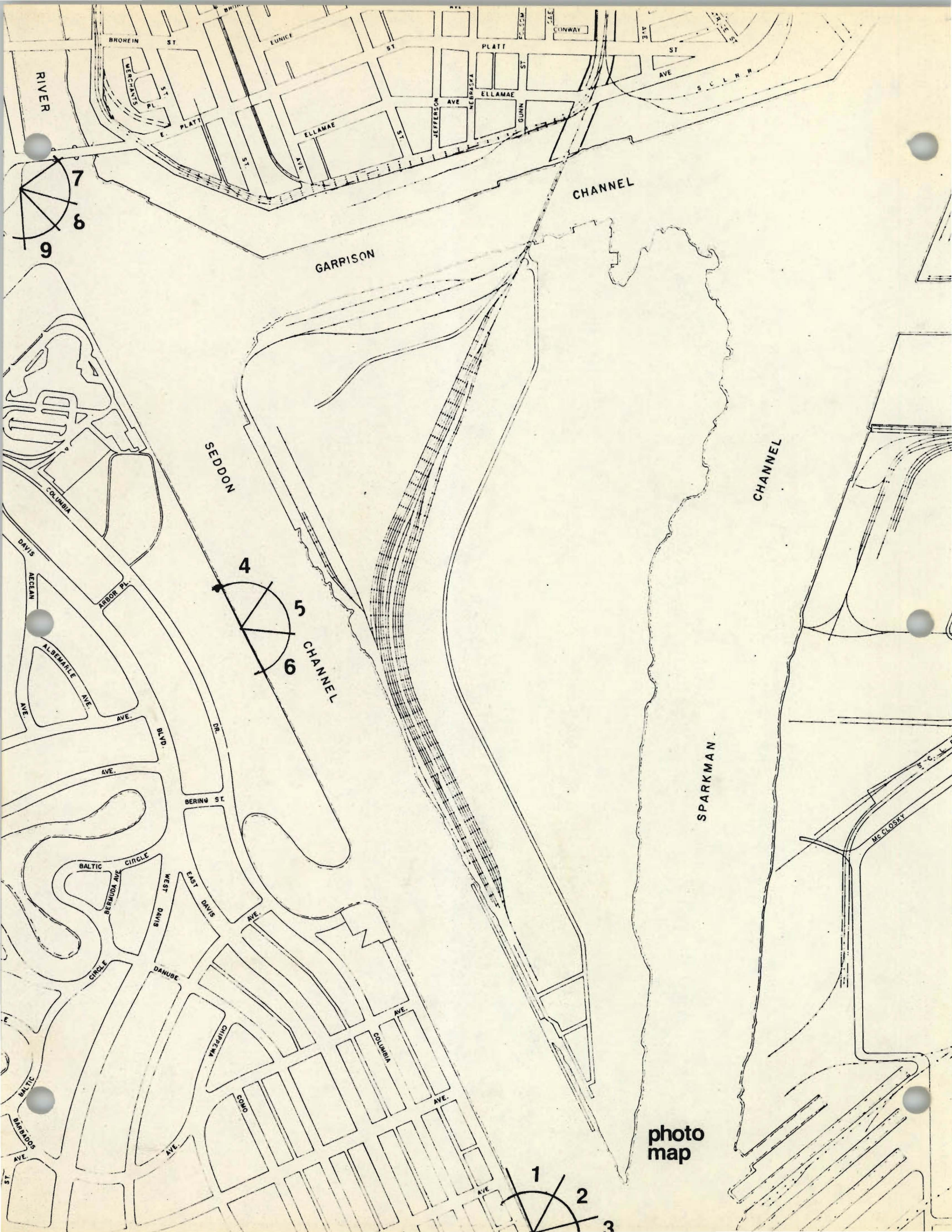


PETER O. KNIGHT
AIRPORT

SITE:
SEDDON ISLAND
TAMPA, FLORIDA



SITE:
SEDDON ISLAND
1" = 245'





1

1



1

2



1

3



4



5



6



1

7



1

8



1

9

E-1

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E-2

INTERVIEW WITH MR. NORMAN THOMPSON, DIRECTOR OF THE TAMPA BAY REGIONAL PLANNING COUNCIL. INTERVIEW HELD IN SEPTEMBER, 1970. DURATION: 20 MINUTES.

A general discussion of the Tampa Bay Region took place. Information on regional and local land use, transportation, design standards, etc. was obtained.

INTERVIEW WITH MR. JAMES JENNEWEIN, A.I.A. ARCHITECT, PARTNER IN THE FIRM OF McELVY, JENNEWEIN, STEFANY AND HOWARD, ARCHITECTS. INTERVIEW HELD IN NOVEMBER OF 1970. DURATION: 1 HOUR.

The discussion centered on the growth of Tampa, past and future, the market for luxury apartments, townhouses, stores, and offices, and the location of access routes to the island.

INTERVIEW WITH MR. GILBERT FLORES, ARCHITECT WITH THE FIRM OF WIELAGE AND McKENNA, ARCHITECTS AND PLANNERS. INTERVIEW HELD IN SEPTEMBER OF 1970. DURATION 3 HOURS.

Mr. Flores is a recent graduate of the University of Florida. While a 5th year student there, he researched, but did not execute, a thesis proposal for the location of a transportation center on Seddon Island.

The principle part of the discussion centered on the type of development that should occur on Seddon Island. Transportation and marketability of development was also discussed.